



constructive solutions

# Nitoplate FEZ Strips

## Carbon Fibre Plates System for Structural Strengthening of Concrete and Masonry Structures

### Uses

- Beams, Columns, R.C. Slabs & Walls

### In the following structures:

- Commercial, high rise
- Industrial plants
- Warehouses
- Bridges, Tunnels, Jetties
- Pipes, Culverts, Chimneys
- Power Station plants

### Advantages

Very high strength with minimal additional dead load (High ratio of strength achieved to additional dead load)

- Improves flexural strength capacity
- Excellent fatigue resistance
- Corrosive resistance low maintenance to strength structure.
- Fast & easy installation: cost savings, time savings and giving quick return to service.
- Low build system: giving minimal effect on structural dimensions and clearance.
- Final coating can be applied on top of it
- Simple detailing for application.
- Application without any usage of heavy machine or equivalent.

### Product Information

Table 1. Nitoplate FEZ Strips & Polymer matrix epoxy

Fibre Volumetric Content	All Type	>= 68%
Grade of Carbon Fibre	Type : S	High Strength Type
Grade of Carbon Fibre	Type : M	High Modulus Type
Density of Carbon Fibre	Type : S	+/- 1.5 g/cm <sup>3</sup>
Density of Carbon Fibre	Type : M	+/- 1.6 g/cm <sup>3</sup>
Grade of Binder	All Type	Polymer Matrix Epoxy Resin

### Description

Nitoplate FEZ Strips are Carbon Fibre Plates System for structural strengthening of concrete and masonry structures.

It is Carbon Fibre reinforced polymer with epoxy matrix, where the plate has appearance of Black color.

Carbon Plate System is fast to apply. It features a uniform quality because of a consistent resin coat.

Using Epoxy adhesive (Nitoplate FEZ Adhesive), Nitoplate FEZ Strips will have very good bonding with the substrates.

Depend on the grade chosen, available for High Strength grades or High Modulus grades.

# Nitoplate FEZ

## Physical Properties

Table 2. Nitoplate FEZ Strips - Products dimension

Nitoplate FEZ Strips	Thickness (mm)	Width (mm)	Roll Length (m)	Cross Sectional Area (mm <sup>2</sup> )
Nitoplate FEZ Strips Type-S				
Nitoplate FEZS 512	1.2	50	100	60
Nitoplate FEZS 612	1.2	60	100	72
Nitoplate FEZS 812	1.2	80	100	96
Nitoplate FEZS 1012	1.2	100	100	120
Nitoplate FEZS 1212	1.2	120	100	144
Nitoplate FEZS 1512	1.2	150	100	180
Nitoplate FEZS 614	1.4	60	100	84
Nitoplate FEZS 914	1.4	90	100	126
Nitoplate FEZS 1214	1.4	120	100	168
Nitoplate FEZ Strips Type-M				
Nitoplate FEZM 514	1.4	50	100	70
Nitoplate FEZM 614	1.4	60	100	84
Nitoplate FEZM 914	1.4	90	100	126
Nitoplate FEZM 1214	1.4	120	100	168

Table 3. Nitoplate FEZ Strips – Mechanical Properties

Parameter	Nitoplate FEZ Strips	
	Type-S	Type-M
Tensile Strength (Mpa)	> 2900	> 2700
E-Modulus (Gpa)	> 160	> 200
Elongation at break (%)	> 1.5	> 1.1

# Nitoplate FEZ

## Adhesive

### Nitoplate FEZ Adhesive – Epoxy

#### Adhesive Properties

<b>Component A (Hardener):</b>	1 part by weight
<b>Component B (Base):</b>	2 part by weight
<b>Shear Strength:</b>	>10 N/mm <sup>2</sup>
<b>Adhesive Strength:</b>	> 2 Mpa *
<b>Tensile Strength:</b>	> 25 Mpa
<b>Static E- Modulus:</b>	> 10,000 Mpa
<b>Compressive Strength:</b>	> 60 Mpa
<b>Colour (Visual):</b>	Grey (after mixing Base & Hardener)
<b>CTE, approx.:</b>	9 x 10 <sup>-5</sup> per °C
<b>Pot Life @ 35° C:</b>	30 – 40 minutes

\*Concrete failure.

## Application Instructions

### Surface Preparation

Reinforced concrete shall be clean, dry, structurally sound and free from foreign material, contaminants, oil, grease and other debris. Concrete must be older than 28 days (moisture < 5%). Any cracks shall be injected with a low viscosity epoxy resin such as Conbextra EP10TG. For filling surface irregularities such as blowholes, honeycombs, etc., use Nitomortar or Renderoc series to patch the defective area.

### Installation of Nitoplate FEZ Strips

After the surface preparation, apply Nitoplate FEZ Adhesive at a estimate rate as specified in the Table 4.

Mix the Nitoplate FEZ Adhesive by using a low speed (300 to 500 rpm) electric drill fitted with a mixing paddle.

Pour 1 part of Hardener to 2 parts of Base into a drum and mix for around 5 minutes until the mix is uniform. Use up all the epoxy adhesive within 30 minutes after mixing.

Pre-cut the strips to the desire sizes and the surface of the strips shall be roughened with sand paper for good adhesion. Use sharp disc cutter, steel guillotine or similar. Clean the plate using cleaner like Solvent 102 to remove dirt & grease residue.

Using pellet knife, trowel, or thickness mold for plate, place the Nitoplate FEZ Adhesive onto the concrete surfaces with thickness min 1 mm, and onto the clean plate with average thickness 2 mm, then using a rubber roller or other plastic roller to press the strips into the adhesive until is forced out on both sides of the strips. Remove all the surplus adhesive on both sides before the adhesive hardened.

Leave the completed Nitoplate FEZ Strips and Adhesive for min. 24 hours prior to overcoating.

## Estimating

Table 4. Nitoplate FEZ Adhesive Estimate Consumption

Type of Products	Adhesive Requirement (kg/meter run)
<b>Nitoplate FEZ Strips Type-S</b>	
Nitoplate FEZS 512	0.34
Nitoplate FEZS 612	0.41
Nitoplate FEZS 812	0.54
Nitoplate FEZS 1012	0.67
Nitoplate FEZS 1212	0.80
Nitoplate FEZS 1512	1.02
Nitoplate FEZS 614	0.41
Nitoplate FEZS 914	0.61
Nitoplate FEZS 1214	0.80
<b>Nitoplate FEZ Strips Type-M</b>	
Nitoplate FEZM 514	0.34
Nitoplate FEZM 614	0.41
Nitoplate FEZM 914	0.61
Nitoplate FEZM 1214	0.80

**Note: For safety factors like rough surfaces, plate crossing, and wastage, need to add estimate consumption around 10-20%**

## Limitations

Nitoplate FEZ Strips System must be protected from permanent exposure of direct sunlight. Exposed plate surface can be painted using suitable protective coating. Contact Fosroc representative for coating specification. Recommended service Temperature is 10 – 50 °C. The lower the temperature, adhesive is more viscous and more difficult to handle.

## Technical Support

FOSROC offers a comprehensive range of high performance, high quality repair, maintenance and construction products. In addition, FOSROC offers a technical support package to specifiers, end users and contractors, as well as onsite technical assistance in locations all over the world.

## Finishing

Several of Fosroc's Architectural or Protective Coating System may be applied to Nitoplate FEZ Strips after 24 hours following the strips application. Please consult Fosroc office for more information.

# Nitoplate FEZ Strips

## Adhesive Packaging

Nitoplate FEZ Adhesive is supplied in 15 kg pack consist of Hardener and Base

<b>Nitoplate FEZ Strips</b>	100 meter roll (can be cut to length according to the customer's requirement)
<b>Nitoplate FEZ Adhesive</b>	15 kg pack consist of 5 kg Hardener (black) 10 kg Base (white)  (Hardener : Base= 1:2)

## Shelf Life

<b>Nitoplate FEZ Strips</b>	Unlimited. Min. 10 years (Condition: no exposure to direct sunlight/UV Light, original pack, dry condition, protect against mechanical damage. Max. Temperature 50°C)
<b>Nitoplate FEZ Adhesive</b>	12 months in original Packaging. Avoid exposed to direct sunlight

## Additional information

Fosroc manufactures a wide range of complementary products which include:

- Waterproofing membranes & waterstops
- Joint sealants & filler boards
- Cementitious & epoxy grouts
- Specialized flooring & coating

Fosroc additionally offers a comprehensive package of products specifically designed for the repair and refurbishment of damaged concrete.

## Health and Safety

Use suitable protective equipments (gloves, eye protection, safety clothing) when handling & cutting the plates and handling with adhesives. Separate SDS available on request.



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### Important note

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