GS Fiber CP System

Heavy duty carbon fibre reinforced polymer plate structural strengthening system.

DESCRIPTION

Heavy duty structural strengthening system based on carbon Fibre Laminate, the GS Fiber CP100 series is a number of products based on CFRP plates for use with reinforced concrete, masonry, stonework, aluminum and timber. The system is composed of CFRP plates and an epoxy adhesive to bond reinforcement.

ADVANTAGES

- Ease of installation – cost effective. Preservation of space management (thin dimensions).
- Ease of jointing and forming.
- Ease of transportation.
- Available in a number of properties supporting ease of design.
- No corrosion and high alkali resistance.
- Extremely high strength.

APPLICATIONS

To strengthen structures for:

- Structure use change (load variations).

a) Increase of live and dead loads.
b) Increase in traffic (dynamic loads).
c) Installation of industrial equipment and machinery.

- Design or Construction Defects:

a) Insufficient structural members dimension.
b) Lack of reinforcement steel.

- Standards and Specifications Regulatory change:
- Seismic design requirements.

a) Design loading standards change.
b) Change in design approach.

- Serviceability Improvement:

a) Crack control.
b) Deflection and deformation decrease.
c) Steel reinforcement stress reduction.

- Structural Repair

a) Structure renovation due to aging.
b) Corrosion of reinforcement.
c) Impact damage.
d) Natural disaster damage

- After construction changes

a) Openings in structural members.
b) Removal of bearing members.

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APPLICATIONS

SUBSTRATE PREPARATION

All substrates shall be free from oil, grease or any contaminants. It is recommended to blast clean substrates and clean all debris or dust. The substrate should be even and checked with a flat metal edge, the tolerance accepted shall not exceed 10 mm in a 2 m length.

MIXING OF GS EPOXY 202:

To ensure proper mixing, a mechanically powered mixer or drill fitted with a suitable paddle should be used. Entire contents of the base and hardener should be poured into a suitable size container and mixed for 3 minutes. Pot life monitoring is crucial, where working in hot weather, components can be cooled down prior to mixing.

APPLICATION OF GS FIBER CARBON LAMINATE:

All pinholes, honeycombs, or surface irregularities on the concrete surface shall be treated and evened out using GS Epoxy 202 putty and leveling compound.
Use GS Epoxy 202 to bond the carbon plates by placing it on the Profiber carbon plate after cleaning from the grinded side. Use a spatula for the placement and make sure that sufficient material is placed on the carbon plate.
Apply a thin layer of GS Epoxy 202 on the prepared substrate. Then apply the fibre plate with the GS Epoxy 202 onto the substrate.
Use a small roller to roll the plate till the excessive adhesive is pushed out from the sides of the plate and remove the excess with a spatula.

When GS Fiber plates are intersecting, the bottom plate is to be ground in the crossing zone and cleaned prior to the application of the top layer. Allow the adhesive to cure for 7 days prior to installing further renders or coatings. The expected consumption of GS Epoxy 202 is as follows:
It also depends on surface conditions

Width of Plate (mm)	GS Epoxy 202 (kg/l meter
50	0.35
80	0.56
100	0.70
120	0.96

PACKAGING

GS Fiber CW System is available by roll in plain card board box. GS Epoxy 202 Primer is available in 5 and 15 kg/sets.

CLEANING

GS Epoxy 201 and equipment can be cleaned by an industrial grade solvent.

Safety Precaution

Some people are sensitive to epoxy resin systems and may develop dermatitis on skin contact. Rubber gloves and/or barrier creams, protective clothing, goggles and respirator shall be worn while handling the materials. Sufficient mechanical and/or local exhaust ventilation shall be provided to maintain easy working conditions.

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TECHNICAL PROPERTIES

GS Fiber CP System:

Product	Fiber Volumetric Contents	Design thickness	Tensile strength	Tensile E-Modulus	Elongation at break	Laminate length	Laminate width
GS fiber CP 50	> 68%	1.2 mm	3000 MPa	165 GPa	1.7%	100 m	50mm
GS fiber CP 80	>68%	1.2 mm	3000 MPa	165 GPa	1.7%	100 m	80mm
GS fiber CP 100	>68%	1.2 mm	3000 MPa	165 GPa	1.7%	100 m	100mm

Properties for the impregnation/encapsulating resin GS Epoxy 202:

Colour: (Mixed)	Grey
Mixed density:	≈ 1.65
E-Modulus: ASTM D695	> 12000
Tensile strength: BS 6319	> 15 MPa
Adhesive strength:	> 3.5 MPa (Concrete failure)
Pot life:	60 min @ 25°C, 40 min @ 35°C
Open time:	30 min
Shear Strength: ASTM D1002	15 MPA
Mixing ratio:	2:1
Compressive strength: BS 6319	> 70 MPa
Glass Transition Temperature	60°C
Tensile elongation at break: BS EN 150527-3	3%
Flexural strength: BS 6319	> 30 MPa
Slant shear bond strength: (old/new concrete) AASHTO T-237-73	> 25 MPa

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