GS Fiber CW System

Heavy duty carbon fibre reinforced polymer wrap structural strengthening system.

DESCRIPTION

GS Fiber CW System is a set of externally bonded carbon Fibre texture products along with resin products that enable site installation of the CFRP structural strengthening system on concrete, masonry or timber.

Applications

To strengthen structures where flexural and shear reinforcement is required for:

- Increasing loading capacity.
- Complying with standards, regulations, specifications and design philosophies.
- Satisfying structure utilization requirements. Structural repairs.
- Protecting structures against natural disasters.

ADVANTAGES

- Thin system with application in layers.
- Flexible surface geometry accommodation.
- No corrosion and resistance to external factors.
- Thixotropic solvent free impregnation resin for easy use.
- Multifunctional use as bending or shear reinforcement.

APPLICATIONS

SUBSTRATE PREPARATION

All substrates shall be free from oil, grease or any contaminants. It is recommended to blast clean substrates and clean from all debris or dust. Substrate shall be dry with a maximum moisture content of 4% and should be a minimum of 28 days old. The temperature application range is 10 - 35°C for substrate and ambient temperatures. Dew point of the substrate should be taken into consideration. All corners receiving the fabric shall be rounded to a minimum radius of 10 - 20 mm depending on fabric type. The bond surface shall be even and free from irregularities, pinholes or formwork marks. Fill all pinholes and smooth irregularities using a twin pack epoxy putty and leveling mortar such as GS Rep Mortar. Adhesion of the impregnation resin values shall not fall below 1.5 N/mm².

PRIMING:

Prepared surfaces should be primed using GS Epoxy 201 Primer. The primer should be applied by rollers at the rate of 0.25 - 0.30 kg/m² and allowed to cure for 24 hours.

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PH :03020463225

MIXING OF GS EPOXY 201:

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 WRAP:

Apply the mixed GS Epoxy 201 to the prepared substrate using a brush or roller at a rate of 0.275 kg/ m² depending on the roughness of the substrate. Within the open time of the adhesive resin, place the GS Fiber CW System fabric onto the resin in the required direction and carefully work the fabric into the resin using a plastic laminating roller until the resin is squeezed out through the fabric and should be rolled again to encapsulate resin impregnation. Another coat of GS Epoxy 201 is applied over the impregnated fabric at the rate of 0.275 kg/m² so as to insure a complete tight and dense system. When applying additional fabric layers; apply impregnation resin GS Epoxy 201 at a rate of 0.25 kg/m² on the first layer, wet on wet. If the application of the resin was not possible within the open time of the first application, a waiting period of 12 hours shall be observed prior to application of the second layer. When overlapping is necessary, always overlap in the Fibre direction with a minimum overlapping distance of 100 mm. Further renders can be achieved by adding a covering layer of the impregnation resin at a rate of 0.25 kg/m² with quartz sand broadcast to work as the bonding medium for cementitious coatings. Always protect reinforcement from direct exposure to UV rays.

COVERAGE

GS Epoxy 201 Primer CW: 0.25 - 0.30 kg/m²/coat. GS Epoxy 201: 0.55 kg/m²/layer for 2 coats.

PACKAGING

GS Fiber CW System is available by roll in plain card board box. GS Epoxy 201 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 CW System: Fibre orientation is 0^{o} (Unidirectional)

Product	Fiber area weight	Design thickness	Tensile strength	Tensile E-Modulus	Elongation at break	Fabric length	Fabric width
GS fiber CW230	230 g/m²	0.131 mm	4800 MPa	230 GPa	2.1%	100 m	0.5 m
GS fiber CW300	300 g/m²	0.166 mm	4800 MPa	230 GPa	2.1%	100 m	0.5 m
GS fiber CW610	600 g/m²	0.337 mm	4800 MPa	230 GPa	2.1%	100 m	0.5 m

Properties for the impregnation/encapsulating resin GS Epoxy 201:

Colour: (Mixed)	Yellowish
Mixed density:	≈ 1.1
Flexural E-Modulus: ASTM D790-99	> 2700 MPa
Tensile strength: BS 6319	> 25 MPa
Adhesive strength:	> 3.5 MPa (concrete failure)
Pot life:	90 min @ 25°C 50 min @ 35°C
Open time:	30 min
Sag flow:	3 – 5 min @ 35°C
Mixing ratio:	2:1
Compressive strength: BS 6319	> 60 MPa
Heat deflection temperature: ASTM D648-98	> 55oC
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	> 15 MPa
Solids:	100%