Profiber CW System

Heavy duty carbon fibre reinforced polymer wrap structural strengthening system

DESCRIPTION

Profiber 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 (max of 3 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.

STANDARDS

Profiber CW System designs are conducted as per ACI 440, FIB 14, and ISIS # 3, 4, 5.

METHOD OF USE

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 - 35ºC 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 Quickmast 341. Adhesion of the impregnation resin values shall not fall below 1.5 N/mm².

PRIMING

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

MIXING OF QUICKMAST ER350 (IMPREGNATION/ ENCAPSULATING REINS)

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 PROFIBER CARBON WRAP

Apply the mixed Quickmast ER350 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 Profiber 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 Quickmast ER350 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 Quickmast ER350 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.

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Profiber CW System

TECHNICAL PROPERTIES

Profiber CW System: Fibre orientation is 0º (Unidirectional)

Dry Fiber Typical Properties

Product	Fibre area weight	Design thickness	Tensile strength*	Tensile E-Modulus*	Elongation at break*	Fabric length	Fabric width
Profiber CW150	150 g/m²	0.086 mm	4800 MPa	230 GPa	1.7%	100 m	0.5 m
Profiber CW200	200 g/m²	0.111 mm	4800 MPa	230 GPa	1.7%	100 m	0.5 m
Profiber CW230	230 g/m²	0.131 mm	4800 MPa	230 GPa	1.7%	100 m	0.5 m
Profiber CW300	300 g/m²	0.166 mm	4800 MPa	230 GPa	1.7%	100 m	0.5 m
Profiber CW450	450 g/m²	0.255 mm	4800 MPa	230 GPa	1.7%	50 m	0.5 m
Profiber CW530	530 g/m²	0.293 mm	4800 MPa	230 GPa	1.7%	50 m	0.5 m
Profiber CW610	600 g/m²	0.337 mm	4800 MPa	230 GPa	1.7%	50 m	0.5 m

** In accordance with ISO 10618.*

PROPERTIES FOR THE IMPREGNATION/ ENCAPSULATING RESIN QUICKMAST ER350:

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:	40 - 90 min @ 25ºC 20 - 50 min @ 35ºC
Open time:	15 - 30 min
Sag flow:	3 – 5 min @ 35ºC
Mixing ratio: (by weight)	2 (base):1 (hardener)

PROPERTIES FOR THE IMPREGNATION/ ENCAPSULATING RESIN QUICKMAST ER350:

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%

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PROPERTIES FOR QUICKMAST PRIMER CW:	
Adhesive strength: (concrete failure)	> 1.5 MPa
Viscosity:	< 2000 cps @ 25ºC
Application temperature:	5 - 35ºC
Solids:	100%
Mixed density:	1.1

CLEANING

Quickmast Primer CW, Quickmast ER350 and equipment can be cleaned by an industrial grade solvent.

PACKAGING

Profiber CW System is available by roll in plain card board box.
Quickmast Primer CW is available in 5 and 15 kg/sets.
Quickmast ER350 is available in 5 and 15 kg/sets.

COVERAGE

Quickmast Primer CW: 0.25 - 0.30 kg/m²/coat.
Quickmast ER350: 0.55 kg/m²/layer for 2 coats.

STORAGE

Profiber CW System has an unlimited shelf life, if stored away from UV light. Always store in a shaded temperature controlled area.

Quickmast ER350 and Quickmast Primer CW has a shelf life of 12 months when stored in a shaded cooled area.

If these conditions are exceeded, contact DCP Technical Department for advice.

CAUTIONS

HEALTH AND SAFETY

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.

If contact with skin or eyes occurs, washing with plenty of water. SOLVENT SHALL NOT BE USED.

If irritation persists, seek immediate medical advice. Smoking and naked flame should be avoided while using the materials.
In case of contact with eyes wash immediately with plenty of water and seek medical advise promptly.

For further information refer to the Material Safety Data Sheet.

FIRE

Profiber CW System and Quickmast ER350 are nonflammable.

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- Building products.
- Structural strengthening.

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