

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.
- » 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 - 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 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.

DCP Saudi Co.

Sulay, Industrial Area, Istanbul St., Riyadh
Industrial City 3, Jeddah
Saudi Arabia
info.saudi@dcp-int.com
www.dcp-int.com

Profiber CW System

TECHNICAL PROPERTIES

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

| Product | Fibre area weight | Design thickness | Tensile strength | Tensile E-Modulus | Elongation at break | Fabric length | Fabric width |
|-----------------------|----------------------|------------------|------------------|-------------------|---------------------|---------------|--------------|
| Profiber CW150 | 150 g/m ² | 0.086 mm | 4800 MPa | 230 GPa | 2.1% | 100 m | 0.5 m |
| Profiber CW200 | 200 g/m ² | 0.111 mm | 4800 MPa | 230 GPa | 2.1% | 100 m | 0.5 m |
| Profiber CW230 | 230 g/m ² | 0.131 mm | 4800 MPa | 230 GPa | 2.1% | 100 m | 0.5 m |
| Profiber CW300 | 300 g/m ² | 0.166 mm | 4800 MPa | 230 GPa | 2.1% | 100 m | 0.5 m |
| Profiber CW450 | 450 g/m ² | 0.255 mm | 4800 MPa | 230 GPa | 2.1% | 50 & 100 m | 0.5 m |
| Profiber CW530 | 530 g/m ² | 0.293 mm | 4800 MPa | 230 GPa | 2.1% | 50 & 100 m | 0.5 m |
| Profiber CW610 | 600 g/m ² | 0.337 mm | 4800 MPa | 230 GPa | 2.1% | 50 & 100 m | 0.5 m |
| Profiber CW900 | 900 g/m ² | 0.506 mm | 4000 MPa | 240 GPa | 1.7% | 50 m | 0.5 m |

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: | 90 min @ 25°C 50 min @ 35°C |
| Open time: | 30 min |
| Sag flow: | 3 – 5 min @ 35°C |
| 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 | > 55°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 | > 15 MPa |
| Solids: | 100% |

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PROPERTIES FOR QUICKMAST PRIMER CW:

| | |
|--------------------------|---------------------------------|
| Adhesive strength: | > 1.5 MPa (concrete failure) |
| Viscosity: | < 2200 cps @ 25°C |
| Pot life: | 80 min |
| Application temperature: | 5 - 35°C |
| Solids: | 100% |
| Mixed density: | 1.087 g/cm ³ |

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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- » Waterproofing.
- » Adhesives.
- » Tile adhesives and grouts.
- » Building products.
- » Structural strengthening.

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Note:

We endeavour to ensure that any information, advice or recommendation we may give in product literature is accurate and correct. However, because we have no control over where and how products are applied, we cannot accept any liability arising from the use of the products.

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