



Expanwrap CFR*

High performance high strength carbon fiber system for structural reinforcement

Uses

Expanwrap CFR is used for strengthening columns and beams of load bearing structures specifically where improvement to shear strength and deformation properties is required. Typical applications include piers, columns, connecting beams and slabs of railway and road bridges, buildings and towers.

Advantages

- High tensile strength and elastic modulus
- Good dimensional stability
- High impact resistance
- High chemical resistance
- Very low electrical conductivity
- Non corroding
- Easy to handle and use
- Suitable in poor access locations
- Good thermal expansion
- High shear stress and cut resistance

Description

Expanwrap CFR a high strength, high elastic modulus carbon fiber sheet. Used in conjunction with a specially developed primer, Expanwrap CFR improves structural performance by strengthening and improving shear strength and deformation properties.



Installation of Expanwrap CFR

Properties

Grade	CFR200	CFR300	CFR300H
Weight (g/m ²)	200	300	300
Design thickness (mm):	0.111	0.167	0.165
Tensile Strength (kgf/cm):	390	590	500
Tensile Strength design (kgf/cm ²)	35,500	35,500	30,000
Tensile modulus design (kgf/cm ²)	2.35x10 ⁶	2.35x10 ⁶	3.80x10 ⁶
Epoxy resin properties			
Specific Gravity @ 23 °C:	1.15		
Pot life @ 20 °C:	90 mins		
Drying time @ 20 °C:	10 hours		
Adhesive strength to Concrete (kgf/cm ²):	29		

Design criteria

Expanwrap CFR high performance fiber is encapsulated in primer Expanbond EPA to provide properties of high strength and high elastic modulus.

Its low density properties, specific strength and modulus are extremely high compared with conventional materials such as steel and concrete.

Expanwrap CFR is extremely easy to handle and apply with no noise and minimal site equipment necessary allowing quick and easy reinforcement of structural members without major disruption.

Expanwrap CFR is lightweight, has high impact resistance, excellent tensile strength, is extremely stable at high and low temperatures and has excellent chemical resistance under a variety of exposure conditions.

Technical support

Fospak offers a technical support package to specifiers, end users and contractors, as well as unrivalled onsite technical assistance in locations all over the world.



CONSTRUCTION CHEMISTRY

Application instructions

Preparation

Concrete surfaces must be dry, smooth, sound and free from debris and loose material. Surfaces must be fully cured and free from contamination.

Thorough preparation of the substrate is vital with light grit blasting recommended to remove all deleterious substances and provide a suitable key. All dust and debris must be removed prior to proceeding. Blow holes or imperfections should be filled with Expanmortar EPFC(B) prior to application of primer Expanprime EP.



Priming of surface with Expanprime EPA

Fire Damaged Bridge, Surface Prepared for CFR

Mixing and Application

Primer Expanprime EP should be mixed, using a slow speed drill (300 to 500 rpm) fitted with a suitable mixing paddle, until homogeneous. Apply Expanprime EP to the prepared substrate using a stiff brush, working the primer well into the substrate at a coverage rate of $0.3\text{kg}/\text{m}^2$.

On porous surfaces Expanprime EP may be absorbed very quickly leaving characteristic light colored dry patches, it is necessary for a second coat of Expanprime EP be applied to these dry areas.

Expanwrap CFR should be cut in lengths corresponding to the area being strengthened, apply Expanwrap CFR to the primed area with gloved hand ensuring intimate contact with the substrate, use a steel roller to smooth out releasing trapped air and encapsulating Expanwrap CFR into the Expancote EPER.

Allow the first application to dry following which apply a second coat of Expancote EPER at a coverage rate of $0.6\text{kg}/\text{m}^2$ to completely encapsulate Expanwrap CFR.

Following cure of the second application of Expancote EPER, apply Expancote PU* finishing coat as UV resistant coating, in case the treated area is direct under sunlight.

Limitations

Expanwrap CFR should be over coated with a UV resistant coating within 6 hours of application.

Estimating

Supply

Expanwrap CFR	50m roll
	Widths: 10cm 30cm 50cm

Storage

Expanwrap CFR should be stored in covered warehouse conditions out of direct sunlight.

Shelf life

Expanwrap CFR shelf life is unlimited if stored in accordance with the above instructions.

Fire

Expanwrap CFR is non flammable.

* Denotes the trademark registered.

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