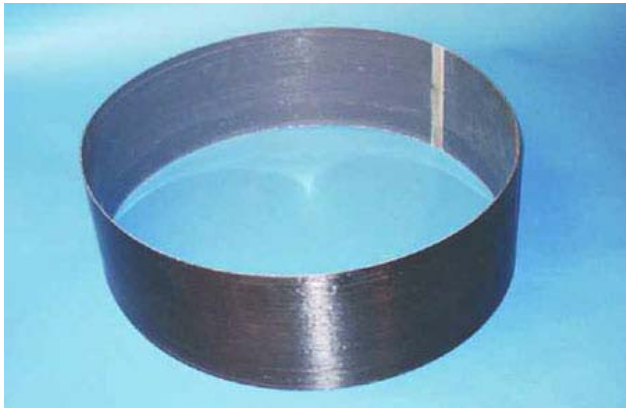


Fortec Carbon Plate System

Unidirectional Carbon Fiber (Strap or) Plate for structural reinforcement and containment



Product Description Fortec Carbon Strap System is a unidirectional, pre-impregnated, carbon fiber reinforced polymer (CFRP) comprised of high tensile strength and high modulus carbon fibers encapsulated in a thermal set resin and cured under pressure during the manufacturing process and designed for use as an externally applied reinforcement for strengthening concrete, timber and masonry structures. A peel-ply fabric is adhered to the strap and when removed leaves a prepared bonding surface for adhesion to a prepared substrate. Fortec Carbon straps and CFRP plates can be manufactured for various modulus and tensile strengths as well as bidirectional systems. Fortec Carbon Strap System are typically field installed using Fortec #4020 Epoxy Gel



One of the many applications of the Fortec Carbon Fiber Strap System is in shear strength improvement and containment of circular structures.

Key Features

- ※ Prepared peel-ply bonding surfaces
- ※ No other preparation of CFRP strap required
- ※ Only peel-ply product on the market
- ※ Designed for use in lieu of multiple layers/plys of fabric
- ※ Supplementary reinforcing of beams & slabs
- ※ Inert reinforcement in highly corrosive environments

Options

- ※ Can be manufactured with bi-directional strengths
- ※ Can be packaged in pre-cut lengths

PRODUCT USE

Target Applications

- ※ Structural Retrofit & Upgrades
- ※ Changes in building use requiring larger loads
- ※ Increased strength of masonry & concrete walls
- ※ Increased strength of parking decks & floor slabs
- ※ Seismic retrofits
- ※ Shear strength improvements
- ※ Flexural strength improvements
- ※ Addition of heavy or vibrating machinery
- ※ Service life increases

Repair Applications

- ※ Collision
- ※ Corrosion
- ※ Fire
- ※ Age
- ※ Overuse

Structural Benefits

- ※ Seismic confinement
- ※ Strength increase
- ※ Deformation & sag decrease
- ※ Steel reinforcement stress reduction
- ※ Crack and moisture control
- ※ Conforms to bowed surfaces

SPECIFICATIONS

Typical Data	Base Material	Carbon fiber tows in an epoxy resin matrix (CFRP)
	Storage	Product to be kept from direct sunlight.
	Shelf Life	Unlimited
	Color	Black
	Product Tensile Strength, ksi (MPa)	449 (3,100)
	Product Tensile Modulus of Elasticity, msi (GPa)	23.9 (165)
	Fiber Volumetric Content	>68%
	Elongation at Break	1.68%
	Design Strain	85%

Mechanical and Physical Properties

Product	Width	Thickness mils (mm)	Cross-Sectional Area in ² (mm ²)	Ultimate Tensile Strength ¹ kip ² (kN)	Design Tensile Strength ¹ kip ² (kN)
Type F-220	2" nominal (50 mm)	47.2 (1.2)	0.093 (60)	41.8 (185.8)	37.8 (168)
Type F-820	4" nominal (100 mm)	47.2 (1.2)	0.186 (120)	83.5 (371.5)	75.5 (336)

¹ASTM D3039

²kip = 1,000 lb-force

Packaging Fortec Carbon Plate System is normally packed and boxed as a coil. The material may be ordered in pre-cut lengths or and a continuous length of up to _____ feet to be cut on site.

HOW TO USE

Preparation Protect the work area from standing water and inclement weather. Surfaces may be damp. Surfaces must be clean and sound. Spalling or other damaged concrete must be removed to solid material. Laitance must be removed. Grinding, chipping, scarifying, shot blasting, sand blasting, or water jet are all acceptable methods. For concrete and masonry applications, patch all uneven surfaces with Fortec #4020 Epoxy Gel. Broadcast silica sand on patches to avoid amine blush. Use oil-free compressed air to remove any dust or debris immediately prior to application of epoxy resins. Keep Fortec Carbon Plate System from contamination. Store in a clean and dry area away from direct sunlight. Keep in original packaging until installation and protect from physical damage. Remove dust, dirt, and any other foreign materials. Remove water, grease, wax, oil or any other liquids with an appropriate solvent.

Cutting Fortec Plate System may be cut to a desired length with heavy shears or guillotine. A fine toothed saw (e.g. hacksaw) may be used if care is taken to avoid splintering or fraying fiber ends.

Epoxy Resin Fortec #4020 Epoxy Gel is recommended for all applications.

Application Apply a prime coat of resin to the substrate at a uniform rate of approximately 25 ft²/gal (approx. 1/16" or 1.5 mm) and wider than the strip to be used. Coverage yield will vary with substrate roughness. Peel off the peel-ply backing from the Fortec Carbon Plate and apply a similar, thin coat of resin to the exposed plate surface. No other preparation or cleaning of the Fortec Carbon Plate is required. Place the Fortec Carbon Plate against the substrate (resin to resin). Using gloved hands and a plastic or rubber laminating roller, depress the Fortec Carbon Plate into the resin to press out air voids. The resin (glue line) should not exceed 1/8" or 3 mm. Remove excess resin. If more than one than one layer of Fortec Carbon Plate is used, peel off the peel-ply backing from the second side of the plate and apply intermediate epoxy resin layers as before. Do not disturb the Fortec Carbon Plate system for 24 hours. After cure, perform sounding to locate any voids. Inject epoxy resin as needed to fill all voids.

Qualifications Each structural and life safety application requires the design and certification of a licensed, professional engineer.

Cautions An externally applied CFRP system is a vapor barrier. Consult with a licensed, professional engineer to evaluate results of encapsulating porous substrates. Installation should be performed only by a Fortec trained and approved installer. Caution must be used when handling CFRP products. Gloves should be worn to protect against carbon dust skin irritation and exposed fiber ends. Use of an appropriate, properly fitted NIOSH approved respirator is recommended. As with any cutting and adhesive operation, proper eye protection should be used. Always follow OSHA and site safety requirements.

Keep Out Of Reach of Children - Keep Container Tightly Closed – Not For Internal Consumption – For Industrial Use Only

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