

Fortec 6K-BD Strap

Carbon fiber bi-directional grid for crack control and structural reinforcement



Product Description Fortec 6K-BD Strap is a 100% carbon fiber, bi-directional grid system comprised of high strength, 6K carbon fiber tows. The system is designed for crack sealing, crack control and structural strengthening of concrete and masonry structures where a thin and highly durable finish is desired. The strap system seals and transfers loads over cracks caused by shrinkage and thermal contraction, joint seal failure, load stress, settling, movement and age. The 6K-BD strap is saturated in a high bond, high strength epoxy resin on a prepared substrate to complete the system.



Key Features

- ❖ 0° and 90°, bi-directional strength
- ❖ Hi bond strength
- ❖ Conforms to irregular surfaces
- ❖ Easy gun-applied epoxy resins
- ❖ Thinnest strap system available
- ❖ Excellent crack control

PRODUCT USE

Target Applications

- ❖ Transverse cracks in bridge decks
- ❖ Post-tensioned segmental bridge joints
- ❖ Longitudinal cracks and joints
- ❖ Rigid pavement joint and dowel protection
- ❖ Cast-in-place water storage structures
- ❖ Cyclical loading applications
- ❖ Vertical wall joints

Repair Applications

- ❖ Collision and impacts
- ❖ Excessive movement
- ❖ Elastomeric joint failures
- ❖ Age
- ❖ Overuse

Benefits

- ❖ Corrosion protection
- ❖ Strength increase
- ❖ Water and chloride prevention
- ❖ Pavement ride quality
- ❖ Reduced repairs
- ❖ Service life increase

SPECIFICATIONS

Typical Data	Base Material	6K carbon filament tows, woven into a flexible, bidirectional grid
	Storage	Product to be kept from direct sunlight
	Shelf Life	Unlimited
	Color	Black
	Filament Tensile Strength, ksi (MPa)	600 (4,133)
	Filament Tensile Modulus, ksi (MPa)	34,000 (234,000)
	Grid Nominal Width, in (mm)	4 (100)
	Grid Nominal Thickness, in (mm)	0.012 (0.30)
	Primary Fiber Direction	0° and 90°, bidirectional open weave, 2 mm x 2 mm
	Shore D Hardness (ASTM D2240)	84D

Mechanical and Physical Properties

0° / 90°	Ultimate Tensile Strength ¹ f_{tu} ksi (MPa)	Modulus of Elasticity ¹ E_f ksi (GPa)	Ultimate Tensile Strength per Unit Width p_{tu} kips/in (kN/mm)	Tensile Elastic Modulus per Unit Width E_{t_f} kips/in (kN/mm)	Ultimate Strain at Rupture ϵ_{tu} in/in (mm/mm)
Average Values	38 (262)	2,900 (20)	0.46 (0.08)	35 (6.0)	0.013 (0.013)

¹ASTM D3039

Packaging: 4-inch (100 mm) width x 200-ft (61 m) length standard. Custom widths and lengths are available.

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 substrate 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 #4550 LPL or #1276 Hi-Modulus Fiber Matrix epoxy resins. Broadcast silica sand on patches to avoid amine blush. Use oil-free compressed air to remove any dust debris immediately prior to application of epoxy resins. Keep Fortec Carbon 6K-BD Straps 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 6K-BD Straps may be cut to a desired length with sharp scissors or a sharp utility knife. Dull tools tend to fray the ends of the product and should be avoided.

Epoxy Resin. Fortec #4550 LPL or #1276 Hi-Modulus Fiber Matrix epoxy resins are recommended for all applications.

Applications. Horizontal and vertical applications may use either the dry or wet lay-up techniques. The wet lay-up technique using an automated impregnator will provide best results for overhead applications. An automated impregnator will typically provide more uniform application of resin using less resin, and improved results with fewer voids and less waste.

Dry Lay-Up Application. Apply resin to the substrate at a uniform rate of approximately 45 ft²/gal (approx. 35 mils). Coverage yield will vary with substrate roughness. Using gloved hands and a plastic laminating roller, press Fortec 6K-BD Strap into the resin pressing out any wrinkles and air voids. Allow the resin to squeeze through the grid to assure a proper bond. For a single grid layer, apply a epoxy resin top coat at a rate of approximately 160 ft²/gal (10 mils) while the base resin is still within its working limit (depending on temperature) and smooth for a finished appearance. If more than one layer of Tow Sheet textile is used, apply intermediate epoxy resin layers at a rate of approximately 100 ft²/gal (15 mils). A good measure for dry lay-up applications will use approximately twice the weight of resin to textile. After cure, perform sounding to locate any voids. Inject epoxy resin as needed to fill all voids.

Wet Lay-Up Application. Prior to applying the wetted Fortec 6K-BD Strap, apply Fortec #4550 LPL or #1276 Hi-Modulus Fiber Matrix epoxy resin using a rate of approximately 160 ft²/gal (6 mils) to a prepared substrate to seal the surface and to provide a tacky surface to apply the 6K-BD Strap textile. Resin will tack at 30 minutes at 70°F. Saturate and infuse the 6K-BD Strap with Fortec #4550 LPL or #1276 Hi-Modulus Fiber Matrix epoxy resin. For uniform application, the resin infusing process should be completed using an automated impregnator. Apply the saturated 6K-BD Strap textile to the sealed substrate and press out any wrinkles and air voids with a plastic laminating roller. Apply additional saturated 6K-BD Strap textile while the previous layer is still within its resin working limit if multiple layers are desired. Finally, apply a top coat of epoxy resin a rate of approximately 160 ft²/gal (10 mils) and smooth for a finished appearance. 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 Fortec 6K-BD Straps. 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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