



CARBON FIBER GRID STITCH (CFGS) with ERT (Epoxy Riveting Technology)

Notes:

Tests conducted at University of Miami. Code Compliant.

Nominal Thickness is the approximate measured thickness of the carbon fiber grid stitch embedded in toughened epoxy adhesive.

Toughened epoxy adhesive. Actual thickness is measured in the field may vary slightly due to variations in the thickness of the epoxy adhesive used to bond the grid to the substrate. Tensile strength per unit width is constant.

Failure strain is based on reported rupture of strain of continuous carbon fiber strands.

PRODUCT DESCRIPTION

StitchDog™ Carbon Fiber Grid Stitch (CFGS) with Epoxy Riveting Technology (ERT) is a pre-impregnated, bidirectional carbon fiber grid strap for use as an externally bonded reinforcement for crack stitching and strengthening of concrete and masonry structures. StitchDog™ Carbon Fiber Grid Stitch with ERT straps are typically field installed using StitchDog™ 4000 Hi-Temp Toughened Epoxy resin or StitchDog™ 4020 Fast Epoxy Hi Mod Gel" to form a carbon fiber reinforced polymer (CFRP) system.

PRODUCT USE

Concrete crack injection repair became less expensive with the introduction of dual cartridge tube sets, dual dispensing guns, etc. However; it also became too easy. Every-one with a pulse began shooting concrete cracks with some kind of sealant. Poured wall companies would pull a guy off a crew when they were slow and send them out for warranty repairs. Find a contractor today that does not offer a warranty, but are they still in business 2 or 3 years later when the repair fails.

Very few concrete crack repairs fail immediately. It is the longterm creep and fatigue of material injected in concrete cracks with the movement of the foundation that can fail over time. By cross-stitching concrete crack repair with carbon fiber stitches this creep is eliminated and improves the long term performance of the repair material.

When StitchDog™ Carbon Fiber Grid Stitches with ERT are applied across the face of the concrete crack, the load is distributed away from the glue line to the portion of the substrate that is not cracked. This prevents fatigue and re-cracking of the injection glue line.

With the StitchDog™ Carbon Fiber Grid Stitches with ERT installed you can be confident the concrete crack will not reoccur at the injection site and the repair will last.



ADVANTAGES

- Low profile and can be installed behind brick facade or other building facades
- Parge coats and painting can be used for aesthetics
- ERT (Epoxy Riveting Technology) Grid - Stitch locks in epoxy for increased bonding capabilities

KEY FEATURES

- Crack reinforcement & strengthening
- For concrete and masonry basement walls, floors, and ceilings
- Grid allows crack injection pass through



SPECIFICATIONS

General Information	
Constituent Materials	Continuous carbon fiber tows and epoxy
Fiber Directions	0° (unidirectional) and 90 degree directional
Color	Black
Surface Texture Typical	Epoxy Riveting Technology (ERT) Grid Stitch for maximum adhesion
Material Properties	
Nominal Thickness	0.06in 1.7mm
TENSILE STRENGTH	6,500 lbs per unit
TENSILE WIDTH	.38 in 9.65 mm
TENSILE MODULUS	19,000 ksi 131 GPa ASTM D3039
FAILURE STRAIN	1.4% 1.4% ASTM D3039

Laminated CFGS System Mechanical and Physical Properties

	Ultimate Tensile Strength ¹ f_{tu} ksi (MPa)	Modulus of Elasticity ¹ E_f ksi (GPa)	Ultimate Tensile Strength per Unit Width ² p_{tu}^* kips/in (kN/mm)	Tensile Elastic Modulus per Unit Width ² E_{tf} kips/in (kN/mm)	Ultimate Strain at Rupture ϵ_{tu}^* in/in (mm/mm)
Design Values ³	217.3 (1,498)	13,550 (93.4)	4.3 (0.76)	271 (47.6)	0.0160

StitchDog™ Carbon Fiber Grid Stitch with ERT results at room temperature using SKRS Room 77°F curing epoxy resin

¹ASTM D3039 ²Thickness of cured laminate = 0.090 in (2.3mm)

³Design values are statistically based as recommended by American Concrete Institute, ACI 440.2R

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