

TITAN®-118

CARBON FIBER STRUCTURAL REPAIR SYSTEM

Description The Titan®-118 structural repair system is comprised of a unique, uni-directional carbon fiber fabric saturated with Titan® Saturant Epoxy, and Titan® Primer Epoxy primer system.

Typical Applications Structural strengthening of concrete or masonry structures for:

- An increase in load requirements due to code change or design error
- Containment and shear reinforcement
- Seismic retrofitting
- Structural damage

Benefits

- System meets all ACI 440.8-13 material specification requirements
- ICC-ES ESR listed product
- 100% solvent-free; Zero VOC system
- Long working time, even in hot environments
- Durable, highly resistant to aggressive environments
- Applicable at up to 90% humidity
- High strength and light weight

Coverage 300 sq. ft. surface area requires: (2) gallons of Titan Primer Epoxy, (5) gallons Titan-Saturant, (1) 12" x 300' roll (0.3m x 9.1m)

Thickness As detailed on individual product data sheets and determined by NRI engineering calculations

Mixing & Mix Ratio As detailed on individual product datasheets

Pot Life 75 minutes @ 75°F (24°C), less at higher temperatures

Limitations

- Application temperature shall be a minimum of 50°F (10°C) and maximum of 280°F (138°C)
- Relative humidity must be 85% or below
- Pipe surface must be 5°F (15°C) above dew point

Related Products The following products are system components of the Titan-118 system:

- Titan-Primer Epoxy
- Titan-Saturant
- Titan-Top Coat (if required)

Composite Gross Laminate Properties per ASTM D-3039	Property	Design Values	Typical Test Value
	Tensile Strength *	152,280 psi	204,900 psi
	Tensile Modulus	12.38 x 10 ⁶ psi	12.38 x 10 ⁶ psi
	Elongation at Break **	1.2%	1.66%
	Laminate Thickness	0.034 in. (1.0mm)	0.034 in. (0.9mm)

Specimens were conditioned & tested under ambient laboratory conditions at 73°F (23°C) with 60% relative humidity.

* Design value calculated as mean ultimate tensile strength minus three standard deviations, per ACI 440.8-13.

** Ultimate rupture strain calculated as the ultimate tensile force per unit width divided by mean chord tensile stiffness per unit width, per ACI 440.8-13.

Dry Fiber Material Properties	Property	Typical Test Value
	Tensile Strength	550,000 psi (3.79 GPa)
	Tensile Modulus	34.5 x 10 ⁶ psi (230 GPa)
	Ultimate Elongation	1.5%
	Density	0.065 lbs./in. ³ (1.8 g/cm ³)
	Weight per square yard	18 oz. (600 g/m ²)



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Design Titan-118 is an ICC-ES, AC-125, ACI 400.8-13 repair system. Consult NRI Engineering for specified use.

Surface Preparation Surface preparation shall be in accordance with ACI 546R, ICRI No. 310.1R-2008 and ACI 562-13 detail methods for the repair and surface preparation of concrete.

Installation Installation of the Titan-118 System shall be performed by NRI qualified applicators only. Surface preparation, mixing of epoxy, and installation of the system are to be in accordance with NRI's Titan-118 Installation Guide, latest revision. Quality control inspection during and after installation of the Titan system shall be performed per NRI's In-Field Quality Manual, latest revision.

Cure Schedule	Temperature	Working Time	Set Time
	50°F (10°C)	225 minutes	24 hours
60°F (16°C)	150 minutes	12 hours	
75°F (24°C)	75 minutes	6 hours	
90°F (32°C)	35 minutes	3 hours	

Cleanup and Safety For proper information regarding the safe handling, storage, and disposal of chemical products, users shall refer to the most recent SDS, latest revision, containing physical, ecological, toxicological, and other safety-related data.

Shelf Life Epoxy: 12 months
Fabric: 12 months

Storage Conditions Store indoors in cool, dry, ventilated storage at temperatures below 95°F (35°C)
Epoxy: store in original, unopened containers
Fabric: store in original packaging away from moisture or any contaminants

Packaging Titan-Saturant: 1 gallon (3.8L) and 5 gallons (19L)
Titan-118 fabric: 12" x 300' (0.3m x 9.14m) rolls
Typically ships in 12" x 12" x 18" boxes (305mm x 330mm x 1626mm)

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