

TITAN®-218

CARBON FIBER STRUCTURAL REPAIR SYSTEM

Description	The Titan®-218 structural repair system is comprised of a unique, bi-directional carbon fiber fabric, saturated with Titan®-Saturant Epoxy.
Typical Applications	Structural strengthening of concrete or masonry structures for: <ul style="list-style-type: none"> • An increase in load requirements due to code change or design error • Containment and shear reinforcement • Seismic retrofitting • Structural damage
Benefits	<ul style="list-style-type: none"> • System meets all ACI 440.8-13 material specification requirements • 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 of Titan-Saturant, (1) 12" x 300' roll (0.3m x 91m)
Thickness	As detailed on individual product datasheets 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	<ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Titan-Primer Epoxy • Titan-Saturant • Titan-Top Coat (if required)

Composite Mechanical Properties	Test	Method	Result
	Tensile Strength	ASTM D3039	Primary: 133 ksi (9,209.39 bar) Secondary: 133 ksi (9,209.39 bar)
	Elongation @ Break	ASTM D3039	1.46%
	Tensile Modulus	ASTM D3039	7.14 msi (492,561.5 bar)
	Laminate Thickness	Per layer	0.028"

Dry Fiber Material Properties	Property	Typical Test Value
	Tensile Strength	550,000 psi (3.79 GPa)
	Tensile Modulus	34.5 x 106 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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Titan-Primer & Titan-Saturant Epoxy Material Properties	Property	Typical Test Value
	Tensile Strength	9,500 psi (65.5 MPa)
	Tensile Modulus	380 ksi (2,620 MPa)
	Elongation at Break	4%
	Flexural Strength	14,530 psi (100.2 MPa)
	Flexural Modulus	865 ksi (5,964 MPa)
	Glass Transition Temp (T _g)	185°F (85°C)

Design Titan-218 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-218 System shall be performed by NRI qualified applicators only. Surface preparation, mixing of epoxy, material saturation, and installation of the system are to be in accordance with NRI's Titan Installation Guide, latest revision. Quality control inspection during and after installation of the Titan system shall be performed per NRI's Installation Validation Procedure: Quality Control Records, 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

Measure Shore D hardness to confirm full set has been achieved.

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-218 fabric: 12" x 300' (0.3m x 91m) rolls
Typically ships in 12" x 12" x 18" boxes (305mm x 330mm x 1626mm)

Warranty ©Neptune Research Inc. (NRI) NRI[®], Titan[®]-218, and Titan[®]-Saturant Epoxy are registered trademarks while of NRI. NRI utilizes a process of continuous product improvement for all of our products. While we do strictly adhere to our products' specifications, we routinely implement product improvements. Therefore, please contact your local NRI distributor or office for the most current product specifications. NRI warrants the quality of this product when used according to directions. Titan-218 is NOT an approved coating system. Failing to coat per standard procedures can lead to atmospheric corrosion damage. Apply protective coatings per company standards. User shall determine suitability of product for use and assumes all risk. The seller will not accept liability for more than product replacement.