

# TECHNICAL DATA SHEET

Rhino Carbon Fiber™ 560 GSM Bidirectional | Revision Date 4/23/2021

8383 Riley Street,  
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E: info@rhinocarbonfiber.com

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## 01: PRODUCT IDENTIFICATION

8383 Riley Street,  
Zeeland, MI  
USA 49464

Product Code:	(Type-Width-Weight)	Weave Weight
	BD-5.5-560	1.03 lb/SY (560 g/m <sup>2</sup> )
	BD-12-560	1.03 lb/SY (560 g/m <sup>2</sup> )
	BD-24-560	1.03 lb/SY (560 g/m <sup>2</sup> )

Product Name: Rhino Carbon Fiber™ 560 GSM Bidirectional

## 02: DESCRIPTION

Rhino Carbon Fiber® is a high-strength, bidirectional carbon fiber fabric. Material is field laminated using RCF™ Saturant-Adhesive Epoxy to form a carbon fiber reinforced polymer (CFRP) system used to strengthen structural concrete elements.

## 03: WHERE TO USE:

Load Increases	<ul style="list-style-type: none"> <li>•Increased loading capacity</li> <li>•Installation of heavy machinery in industrial buildings</li> <li>•Vibrating structures</li> <li>•Changes of building utilization</li> <li>•Meeting of changed standards or specifications</li> </ul>
Seismic Strengthening	<ul style="list-style-type: none"> <li>•Column wrapping</li> <li>•Masonry walls</li> </ul>
Damage to Structural Parts	<ul style="list-style-type: none"> <li>•Aging of construction material</li> <li>•Vehicle impact</li> <li>•Fire and blast resistance</li> <li>•Prevention of defects caused by earthquakes</li> </ul>
Change in Structural System	<ul style="list-style-type: none"> <li>•Removal of walls or columns</li> <li>•Removal of slab sections for openings</li> </ul>
Design or Construction Defects	<ul style="list-style-type: none"> <li>•Insufficient reinforcements</li> <li>•Insufficient structural depth</li> </ul>

## 04: ADVANTAGES

- Used for shear, confinement or structural strengthening
- Flexible, can be wrapped around complex geometries
- High-strength
- Lightweight
- Non-corrosive
- Alkali Resistant
- Low aesthetic impact
- Fiber orientation tailor-made

## 05: TYPICAL DATA

RESULTS MAY DIFFER BASED UPON STATISTICAL VARIATIONS DEPENDING UPON MIXING METHODS AND EQUIPMENT, TEMPERATURE, APPLICATION METHODS, TEST METHODS, ACTUAL SITE CONDITIONS AND CURING CONDITIONS.

Storage Conditions	Store dry at 40° - 95°F (4° - 35°C)
Shelf Life	10 years
Color	Black (red string)
Primary Fiber Direction	Bidirectional

FIBER PROPERTIES			
	English	Metric	
Tensile Strength	710 ksi	4,900 MPa	
Tensile Modulus	36.3 Msi	250 GPa	
Elongation	2%	2%	
Density	.065 lbs/in <sup>3</sup>	1.79 g/cm <sup>3</sup>	
Nominal Thickness	.013 in	0.33 mm	

<sup>A</sup>Load and Chord Stiffness per Unit are computed based on CFRP laminate specimen width

<sup>\*</sup>20 sample coupons per test series

<sup>1</sup>Average value of test series

<sup>2</sup>Average value minus 3 standard deviations per ACI440

COMPOSITE PROPERTIES					
	Tested Value <sup>1</sup>		Design Value <sup>2</sup>		STM Testing Method*
	English	Metric	English	Metric	
Tensile Strength	118.9 ksi	819.7 ksi	102.4 ksi	705.9 MPa	D3039
Tensile Modulus	6.33 Msi	43.6 Msi	5.13 Msi	35.5 GPa	D3039
Tensile Elongation, %	1.89	1.89	1.44	1.44	D3039
Load Per Unit Width <sup>A</sup>	2259 lbf/in	0.4 kN/mm	1945 lbf/in	0.34 kN/mm	D3039
Chord Stiffness per Unit <sup>A</sup>	120 lbf/in	21.1 N/mm			D3039
Nominal Thickness	0.019 in	0.48 mm			



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## 06: HOW TO USE: SURFACE PREP

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Surface must be clean, sound, and dry. Remove a light layer of concrete from the surface to allow the epoxy to penetrate the substrate (Refer to ICRI 310-2R for additional information). Typical methods include shot blasting or grinding to achieve this open textured surface. Consult the epoxy adhesive data sheets for additional information on surface preparation.

Existing uneven surfaces must be filled with an appropriate repair mortar/hydraulic cement. The adhesive strength of the concrete must be verified after surface preparation by random pull-off testing (ASTM D-4541) at the discretion of the engineer. Minimum tensile strength, 200 psi (1.4 MPa) with concrete substrate failure.

Round all corners to 1/2" radius in certain "contact critical" applications and at the engineers discretion, a thorough cleaning of the substrate using low pressure sand or water blasting may be sufficient.

## 07: APPLICATION

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Application prior to placing the fabric, scarify the concrete surface using dustless grinding system. The fabric may also be manually saturated using your hand, a roller prior or scraper to placement. In either case, installation of this system should be performed only by a trained contractor.

## 08: TOOLING & FINISHING

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Fabric can be cut to appropriate lengths by using scissors. Since the dull or worn cutting implements can damage, weaken or fray the fabric, their use should be avoided.

## 09: LIMITATIONS

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- Design calculations must be made and certified by an independent licensed professional engineer.
- System is a vapor barrier. Concrete should not be fully encapsulated in areas of freeze/ thaw.



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