

# TECHNICAL DATA SHEET

Rhino Carbon Fiber™ 400 GSM Unidirectional | Revision Date 7/25/2019

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01

## 01: PRODUCT IDENTIFICATION

RHINO PRODUCTS USA  
1633 THORNWOOD DRIVE  
HEATH, OHIO 43056

Product Name: Rhino Carbon Fiber™ 400 GSM Unidirectional

## 02: DESCRIPTION

Rhino Carbon Fiber™ 400 gsm Unidirectional is a high strength, unidirectional carbon fiber fabric equipped with weft fibers that keep the fabric stable. The material is field laminated using Saturant-Adhesive Epoxy to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural concrete elements.

## 03: WHERE TO USE:

- Increase load capacity of structural elements (Beams, Slabs, Columns, Walls, Etc.)
- Restore structural integrity of damaged or deteriorated structural elements
- Repair for damaged or missing reinforcing steel/post tensioning
- Improved blast resistance of concrete, masonry, or stone in mining operations
- Additional Reinforcement to repair/withstand seismic events

## 04: ADVANTAGES

- Used for shear, confinement or flexural strengthening
- Flexible, can be wrapped around complex geometries
- High Strength
- Light Weight
- Non-corrosive
- Alkali Resistant
- Low aesthetic impact
- Economical

## 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	2 years from date of production
Color	Black
Primary Fiber Direction	Unidirectional
Areal Weight	400g/m2 (0.124 lbs/ft2)

### FIBER PROPERTIES

Property	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

### STRAP PROPERTIES

Width	6in (.1524 m)	Calculated Tensile Strength	37,990 lbs (17,232 Kg)	per ISO 10618
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## 06: HOW TO USE: SURFACE PREP

Surface must be clean, sound, and dry. Remove a light layer of concrete from the surface to allow the epoxy to penetrate the substrate. 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

Apply a prime coat of epoxy to the substrate, work the carbon fiber into the epoxy, then add final layer of epoxy to ensure the material is properly saturated. The fabric may also be pre saturated using accepted industry techniques. In either case, installation of this system should be performed only by a trained contractor. In fiber direction, overlapping of the fabric must be at least 6 in or as per the project specifications. Overlapping sections of additional layers should be distributed in location free of other laps.

## 08: TOOLING & FINISHING

Fabric can be cut to appropriate lengths by using sharp heavy duty shears. Dull or worn cutting implements can damage, weaken or fray the fabric and their use should be avoided.

## 09: LIMITATIONS

- 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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