

PRODUCT DATA SHEET

SikaWrap®-103 C Pre-Saturated

CARBON FIBER FABRIC FOR STRUCTURAL STRENGTHENING

PRODUCT DESCRIPTION

SikaWrap®-103 C Pre-Saturated is a high strength, unidirectional carbon fiber fabric pre-saturated to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural concrete elements.

USES

Load Increases

- Increased live loads
- Increased traffic volumes on bridges
- Installation of heavy machinery in industrial buildings
- Vibrating structures
- Changes of building utilization

Seismic Strengthening

- Column wrapping
- Masonry walls

Damage to Structural Parts

- Aging of construction materials
- Vehicle impact
- Fire
- Blast resistance

Changes in the Structural System

- Removal of walls or columns
- Removal of slab sections for openings

Corrections to Design or Construction Defects

- Insufficient reinforcements
- Insufficient structural depth

CHARACTERISTICS / ADVANTAGES

- Used for shear, confinement, seismic or flexural strengthening
- Versatile, can be wrapped around complex geometries
- High Strength
- Light Weight
- Non-corrosive
- Alkali Resistant
- Low aesthetic impact
- 2-hour open time

APPROVALS / STANDARDS

- Use in accordance with American Concrete Institute (ACI) 440 Guides for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete / Unreinforced Masonry Structures.

PRODUCT INFORMATION

Fiber Type

Primary Fiber Direction: 0° (unidirectional) - Carbon
Color: Black

Packaging

Rolls: 24 in. x 30 ft. (61 cm x 9.14 m); Box contains 2 rolls.

Shelf Life	1 year from date of manufacture if stored properly in original, unopened, undamaged, sealed packaging.
Storage Conditions	Store dry at 40°- 95° F (4°- 35° C)
Dry Fibre Density	0.065 lbs./in ³ (1.8 g/cm ³)
Dry Fibre Thickness	0.0135 in. (0.34 mm)
Area Density	18 oz. / sq. yd. (610 g/m ²)
Dry Fibre Tensile Strength	5.5 x 10 ⁵ psi (3,793 MPa)
Dry Fibre Modulus of Elasticity in Tension	34 x 10 ⁶ psi (234.4 GPa)
Dry Fibre Elongation at Break	1.5%

TECHNICAL INFORMATION

Nominal Ply Thickness	Avg. Ultimate Value 0.035 in. (0.889 mm)	Design Value 0.035 in. (0.889 mm)	-
Tensile Strength	Avg. Ultimate Value 147,594 psi (1,018 MPa)	Design Value (f_{fu}^*) 120,589 psi (831 MPa) *	(ASTM D 3039 / ASTM D 7565) at 73° F (23° C), 50% R.H.
	* Average ultimate value minus 3 standard deviations		
Tensile Modulus	Avg. Ultimate Value -	Design Value (E_f) 12.32 msi (85.0 GPa)	(ASTM D 3039 / ASTM D 7565) at 73° F (23° C), 50% R.H.
Tensile % Elongation	Avg. Ultimate Value 1.12%	Design Value (ϵ_{fu}^*) 1.0% *	(ASTM D 3039 / ASTM D 7565) at 73° F (23° C), 50% R.H.
	* Average ultimate value minus 3 standard deviations		
Tensile Resistance	Avg. Ultimate Value 5.17 kips/in. width (923 kg/cm width) *	Design Value 4.22 kips/in. (754 kg/cm width) *	-
	* Average ultimate value minus 3 standard deviations		
Tensile Stiffness	Avg. Ultimate Value -	Design Value ($E_f A_f$) 431.2 kips/in. width (77,000 kg/cm width)	-

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

Surface must be clean and sound. It may be dry or damp, but free of standing water and frost. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles, disintegrated materials and other bond inhibiting materials from the surface. Consult the current product data sheets for Sikadur-330 / Sikadur 340 / Sikadur 345 for additional information on surface preparation. Existing uneven surfaces must be filled with an appropriate repair mortar. 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 is typical.

Preparation Work: Concrete - Blast clean, shotblast or use other approved mechanical means to provide a roughened, open-textured surface (minimum ICRI CSP-3). 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 blasting or water blasting may be sufficient. If a wet method is chosen, a thorough amount of drying time will

be needed.

APPLICATION METHOD / TOOLS

Prior to placing the fabric, the concrete surface is primed and sealed using either Sikadur®-330, Sikadur® 340 or Sikadur® 345. In either case, installation of this system should be performed only by a specially trained contractor.

Tooling & Finishing

Fabric can be cut to appropriate lengths by using a commercial quality, heavy duty scissor. Since the dull or worn cutting implements can damage, weaken or fray the fabric, their use should be avoided.

Open time: 2 hours after foil is opened at standard, normal temperature and relative humidity conditions. Fabric must be placed while the Sikadur® adhesive is still in a tacky condition. The installer is strongly encouraged to apply the fabric in a timely manner after removal from its sealed foil packaging.

LIMITATIONS

- System is a vapor barrier. Concrete should not be fully encapsulated in areas of freeze/thaw. Consideration should be given to the substrate's ability to "breathe" (i.e. the release of moisture vapor).
- Design calculations must be made and certified by an independent licensed professional engineer.
- Do not place carbon fiber in direct contact with steel. Must be isolated (e.g. glass fabric) to protect against corrosion.

BASIS OF PRODUCT 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.

OTHER RESTRICTIONS

See Legal Disclaimer.

ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the actual Safety Data Sheets containing physical, environmental, toxicological and other safety related data. User must read the current actual Safety Data Sheets before using any products. In case of an emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

LEGAL DISCLAIMER

- KEEP CONTAINER TIGHTLY CLOSED
- KEEP OUT OF REACH OF CHILDREN
- NOT FOR INTERNAL CONSUMPTION
- FOR INDUSTRIAL USE ONLY
- FOR PROFESSIONAL USE ONLY

Prior to each use of any product of Sika Corporation, its subsidiaries or affiliates ("SIKA"), the user must always read and follow the warnings and instructions on the product's most current product label, Product Data Sheet and Safety Data Sheet which are available at usa.sika.com or by calling SIKA's Technical Service Department at 1-800-933-7452. Nothing contained in any SIKA literature or materials relieves the user of the obligation to read and follow the warnings and instructions for each SIKA product as set forth in the current product label, Product Data Sheet and Safety Data Sheet prior to use of the SIKA product.

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