

PRODUCT DATA SHEET

SikaWrap®-103 C Plus

Carbon fiber fabric for structural strengthening

PRODUCT DESCRIPTION

SikaWrap®-103 C Plus is a high strength, unidirectional carbon fiber fabric. Material is field laminated using Sikadur-300/Sikadur Hex-300 epoxy to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural concrete elements.

USES

SikaWrap®-103 C Plus may only be used by experienced professionals.

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

PRODUCT INFORMATION

Fiber Type	0° (unidirectional) - Carbon
Packaging	Packaging Rolls: 25 in. x 50 ft. (63.5 cm x 15.2 m); 25 in. x 300 ft. (63.5 cm x 91.4 m)
Shelf Life	10 years from date of production if stored properly in original, unopened,

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

APPROVALS / STANDARDS

Used in systems that follow American Concrete Institute (ACI) 440 Guides for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete / Unreinforced Masonry Structures

undamaged packaging.

Storage Conditions

Store dry at 40° - 95° F (4° - 35° C)

TECHNICAL INFORMATION

Dry Fiber Properties

Fibre modulus of elasticity	33 msi (230GPa)
Fibre tensile strength	700ksi (4,900 MPa)
Fiber tensile strain	2.20%
Fiber Density	0.065 lbs/in ³ (1.80 g/cm ³)
Area density	19 oz/yd ² (645 g/m ²)
Dry fabric thickness	0.014in (0.356 mm)

Tensile Strength

Average Ultimate Value	Design Value (f_{fu}^*)	(ASTM D 3039)
214.1 ksi (1,476 MPa)	188.9 ksi (1,302 MPa)*	at 73° F (23° C), 50% R.H.

* Average ultimate value minus 3 standard deviations

Average Ultimate Value	Design Value	(ASTM D 7565)
-	7.6 kips/in./ply	at 73° F (23° C), 50% R.H.

Tensile Modulus of Elasticity

Average Ultimate Value	Design Value (E_f)	(ASTM D 3039)
-	12.89 msi (88.9 GPa)	at 73° F (23° C), 50% R.H.

Average Ultimate Value	Design Value ($A_f E_f$)	(ASTM D 3039)
-	515 kips/in width	at 73° F (23° C), 50% R.H.

Elongation

Average Ultimate Value	Design Value (ϵ_{fu}^*)	(ASTM D 3039)
1.66%	1.48%*	at 73° F (23° C), 50% R.H.

* Average ultimate value minus 3 standard deviations

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.

LIMITATIONS

- System is a vapor barrier when cured. Concrete should not be fully encapsulated in areas of freeze/thaw. The ability to permit the release of moisture vapor from the substrate may need to be considered.
- 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. with a SikaWrap glass fabric) to protect against corrosion.

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.

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 Hex-300 and/or Sikadur-330 for additional information on surface preparation.

Existing uneven surfaces must be filled with an appropriate repair mortar. At the discretion of the engineer, the adhesive strength of the concrete should be verified after surface preparation by random pull-off testing (ASTM D 4541). Minimum tensile strength required is 200 psi (1.4 MPa) with concrete substrate failure (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 used, allow for a thorough amount of drying time.

APPLICATION METHOD / TOOLS

Prior to placing the fabric, the concrete surface is primed and sealed using either Sikadur Hex-300 or Sikadur-330 depending upon orientation. 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 scissors. Since dull or worn cutting implements can damage, weaken or fray the fabric, their use should be avoided.

OTHER RESTRICTIONS

See Legal Disclaimer.

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.

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within the product’s shelf life. User determines suitability of product for intended use and assumes all risks. User’s and/or buyer’s sole remedy shall be limited to the purchase price or

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Sika Corporation

201 Polito Avenue
Lyndhurst, NJ 07071
Phone: +1-800-933-7452
Fax: +1-201-933-6225
usa.sika.com



Product Data Sheet

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