

## PRODUCT DATA SHEET

# SikaWrap® Hex-103 C 2X

High Strength, double thickness Carbon Fiber fabric for Structural Strengthening

### PRODUCT DESCRIPTION

SikaWrap® Hex-103 C 2X is a high strength, double thickness, unidirectional carbon fiber fabric. Material is field laminated using Sikadur® Hex 300 epoxy to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural concrete elements.

### USES

SikaWrap® Hex-103 C 2X 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
- Change in Structural System
- Removal of walls or columns
- Removal of slab sections for openings
- Design or Construction Defects
- Insufficient reinforcements
- Insufficient structural depth

### PRODUCT INFORMATION

### CHARACTERISTICS / ADVANTAGES

- Approved by ICC ESR-3288
- Used for shear, confinement or flexural strengthening
- Flexible, can be wrapped around complex geometries
- High Strength
- High Tensile Modulus
- Non-corrosive
- Alkali Resistant
- Low aesthetic impact

### APPROVALS / STANDARDS

- Approved by ICC ESR-3288
- IBC 2015 Compliance

Fiber Type	0° (Unidirectional)
Packaging	Rolls: 25 in. (0.6 m) x 150 ft (46 m)
Shelf Life	10 years
Storage Conditions	Store dry at 40–95 °F (4–35 °C)
Dry Fibre Density	0.063 lb./in <sup>3</sup> (2.0 g/cm <sup>3</sup> )
Dry Fibre Thickness	0.024 in. (0.61 mm)
Area Density	37.2 osy (1,262 gsm)
Dry Fibre Tensile Strength	550 ksi (3,793 MPa)
Dry Fibre Modulus of Elasticity in Tension	34 msi (234.5 GPa)
Dry Fibre Elongation at Break	1.50 %

## TECHNICAL INFORMATION

Nominal Ply Thickness	Average Ultimate Value	Design Value	-
		0.07 in. (1.8 mm)	
Tensile Strength	Average Ultimate Value	Design Value	(ASTM D-3039)
	176.6 ksi (1,218 MPa)	160.1 ksi (1,104 MPa)*	73 °F (23 °C)
			50 % R.H.
	* Average ultimate value minus 3 standard deviations		
Tensile Modulus	Average Ultimate Value	Design Value	(ASTM D-3039)
		12.3 msi (84.2 GPa)(E <sub>f</sub> )	73 °F (23 °C)
			50 % R.H.
Tensile % Elongation	Average Ultimate Value	Design Value	(ASTM D-3039)
	1.45%	1.15%*	73 °F (23 °C)
			50 % R.H.
Tensile Stiffness	Average Ultimate Value	Design Value	(ASTM D-7565)
		861 kips/in./ply (E <sub>f</sub> *A)	73 °F (23 °C)
			50 % R.H.

## 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 US and/or Sikadur® Hex 300 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.

**Preparation Work: Concrete** - Blast clean, shotblast or use other approved mechanical means to provide a roughened, open-textured surface. Round all corners to 1/2 in. (12.7 mm) 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.

### APPLICATION METHOD / TOOLS

#### Mixing

Consult the current product data sheets for Sikadur® 300, Sikadur® 301, Sikadur® 330 US and/or Sikadur® Hex 300 for information on epoxy resins.

Prior to placing the fabric, the concrete surface is primed

and sealed using Sikadur® 330 US and/or Sikadur® Hex 300 epoxy. For overhead or vertical applications, prime concrete with Sikadur® 330 US to improve tack. SikaWrap® Hex-103 C 2X is impregnated using Sikadur® Hex 300. On larger projects, the impregnation process for Sikadur® Hex 300 may be accomplished using a mechanically driven fabric saturator similar device. The fabric may also be manually saturated by hand for Sikadur® Hex 300 using a roller prior to placement. In either case, installation of this system should be performed only by a specially trained contractor.

**NOTE:** On Caltrans DOT projects, only mechanically driven saturation may be used.

### Tooling and Finishing

Cutting of SikaWrap: 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.

## 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.
- 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

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#### Product Data Sheet

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## LEGAL DISCLAIMER

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

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