

# PRODUCT DATA SHEET

## SikaWrap® Hex-103 C

Carbon fiber fabric for structural strengthening

### DESCRIPTION

SikaWrap® Hex-103 C 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

SikaWrap® Hex-103 C 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

### CHARACTERISTICS / 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

### APPROVALS / CERTIFICATES

- Approved by ICC ESR-3288
- IBC 2015 Compliance

### PRODUCT INFORMATION

<b>Fibre type</b>	0° (unidirectional)
<b>Packaging</b>	Rolls: 25 in. x 50 ft.; 25" x 300 ft.
<b>Shelf life</b>	10 years in original packaging
<b>Storage conditions</b>	Store dry at 40–95 °F (4–35 °C)
<b>Dry fibre thickness</b>	0.0135 in. (0.34 mm)
<b>Mass per area</b>	18 oz. / sq. yd. (611 g/m <sup>2</sup> )

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	1.5%

## TECHNICAL INFORMATION

Design nominal thickness	0.04 in. (1.0 mm)		
Laminate tensile strength	<b>Average Ultimate Value</b>	<b>Design Value</b>	(ASTM D-3039)
	181.0 ksi (1,248 MPa)	(f <sub>tu</sub> <sup>*</sup> ) 160.9 ksi (1,110 MPa)*	
	* Average ultimate value minus 3 standard deviations		
Laminate modulus of elasticity in tension	<b>Average Ultimate Value</b>	<b>Design Value</b>	(ASTM D-7565)
	-	(E <sup>T</sup> ) 10.39 msi (71.7 GPa)	
	* Average ultimate value minus 3 standard deviations		
Laminate elongation at break in tension	<b>Average Ultimate Value</b>	<b>Design Value</b>	(ASTM D-3039)
	1.75%	1.45%*	
	* Average ultimate value minus 3 standard deviations		
Tensile stiffness	<b>Average Ultimate Value</b>	<b>Design Value</b>	(ASTM D-7565)
	-	(E <sub>f</sub> *A) 416 kips/in. width	
	* Average ultimate value minus 3 standard deviations		

## BASIS OF PRODUCT DATA

All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## IMPORTANT CONSIDERATIONS

- System is a vapor barrier. Concrete should not be fully encapsulated in areas of freeze/thaw.
- 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.
- On projects governed by ICC regulations, use products listed on ESR-3288

## ECOLOGY, HEALTH AND SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

## 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® 340 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" 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

Prior to placing the fabric, the concrete surface is primed and sealed using Sikadur® 340. 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.

## LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

## LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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**PRODUCT DATA SHEET**

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