

# SikaWrap® Hex 113C

## Bi-directional Carbon fiber fabric for structural strengthening

**Description** SikaWrap Hex 113C is a bi-directional carbon fiber fabric. Material is field laminated using Sikadur 300, Sikadur Hex 300/306 or Sikadur Hex 330 epoxy to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural elements.

**Where to Use**

**Load increases**

- Increased live loads in warehouses
- 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

**Change in structural system**

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

**Design or construction defects**

- Insufficient reinforcements
- Insufficient structural depth

**Advantages**

- Lightweight fabric ideal for confined spaces
- Can be applied in dry or wet lay-up process
- Used for shear, confinement or flexural strengthening
- Flexible, can be wrapped around complex shapes
- High strength
- Non-corrosive
- Alkali resistant
- Low aesthetic impact

**Packaging** Rolls: 50 in. x 300 ft.

### 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°F-95°F

**Color** Black

**Primary Fiber Direction** 0°/90° (bi-directional)

**Weight per Square Yard** 5.7 oz. (196 g/m<sup>2</sup>)

**Weight Ratio (Warp:Weft)** 1:1

#### **Cured Laminate Properties (0° & 90°) Design Values**

**Tensile Strength** 66,000 psi (456 MPa)

**Tensile Modulus** 6.0 x 10<sup>6</sup> psi (41,400 MPa)

**Elongation at Break** 1.2%

**Thickness** 0.010 in. (0.25 mm)

**Strength per Inch Width** 660 lbs./layer (2.92 kN)

#### **Fiber Properties**

**Tensile Strength** 5 x 10<sup>5</sup> psi (3,450 MPa)

**Tensile Modulus** 33.4 x 10<sup>6</sup> psi (230,000 MPa)

**Elongation** 1.5%

**Density** 0.065 lbs./in.<sup>3</sup> (1.8 g/cc)



## How to Use

### Surface 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 Sikadur 300, Sikadur Hex 300/306 and Sikadur 330 technical data sheets 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 (ACI 503R) 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 an open roughened texture.

In certain applications and at the engineer's discretion, the intimate contact between the substrate and the fabric may be determined to be non-critical. In these cases, a thorough cleaning of the substrate using low pressure sand or water blasting is sufficient.

### Mixing

Consult Sikadur 300, Sikadur Hex 300/306 or Sikadur 330 technical data sheets for information on epoxy resins.

### Application

SikaWrap Hex 113C can be applied using wet or dry lay-up methods.

**Dry Lay-Up:** Apply the mixed Sikadur 330 epoxy resin directly onto the substrate at a rate of 40-50 ft<sup>2</sup>/gal. (32-40 mils), depending on the surface profile. Carefully place the fabric into the resin with gloved hands and smooth out any irregularities or air pockets using a plastic laminating roller. Allow the resin to squeeze out between the rovings of the fabric. If more than one layer of fabric is required, apply additional Sikadur 330 at a rate of 100ft<sup>2</sup>/gal. (16 mils) and repeat as above. Apply a final coat of Sikadur 330 to the exposed surface at a rate of 160ft<sup>2</sup>/gal. (10 mils).

**Wet Lay-Up:** Seal the prepared concrete surface using Sikadur 300, Sikadur Hex 300 or Sikadur Hex 306. Material may be applied by spray, brush or roller. SikaWrap Hex 113C can be impregnated using either the Sikadur 300, Sikadur Hex 300 or Sikadur Hex 306 epoxy. For best results, the impregnation process should be accomplished using an automated fabric saturator. Once saturated, apply fabric to the sealed concrete surface and smooth out any irregularities or air pockets using a plastic laminating roller. If required, apply additional layers of fabric while epoxy on previous layer is still tacky. Coat the exposed surface of final fabric layer using Sikagard 670W or Sikagard 62.

Installation of SikaWrap Products should be performed only by specially trained approved contractors.

### Cutting SikaWrap

Fabric can be cut to appropriate length by using a commercial quality heavy duty scissor. Since dull or worn cutting implements can damage, weaken or fray the fiber, their use should be avoided. Consult MSDS for proper handling procedures.

### Limitations

- Design calculations must be made and certified by an independent licensed professional engineer.
- System is a vapor barrier. Concrete should not be encapsulated in areas of freeze/thaw.

### Caution

SikaWrap fabric is non-reactive. However, caution must be used when handling since a fine "carbon dust" may be present on the surface. Gloves must therefore be worn to protect against skin irritation.

Caution must also be used when cutting SikaWrap fabric to protect against airborne carbon dust generated by the cutting procedure. Use of an appropriate, properly fitted NIOSH approved respirator is recommended.

**KEEP CONTAINER TIGHTLY CLOSED • KEEP OUT OF REACH OF CHILDREN • NOT FOR INTERNAL CONSUMPTION • FOR INDUSTRIAL USE ONLY**

All information provided by Sika Corporation ("Sika") concerning Sika products, including but not limited to, any recommendations and advice relating to the application and use of Sika products, is given in good faith based on Sika's current experience and knowledge of its products when properly stored, handled and applied under normal conditions in accordance with Sika's instructions. In practice, the differences in materials, substrates, storage and handling conditions, actual site conditions and other factors outside of Sika's control are such that Sika assumes no liability for the provision of such information, advice, recommendations or instructions related to its products, nor shall any legal relationship be created by or arise from the provision of such information, advice, recommendations or instructions related to its products. The user of the Sika product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with the full application of the product(s). Sika reserves the right to change the properties of its products without notice. All sales of Sika product(s) are subject to its current terms and conditions of sale which are available at [www.sikausa.com](http://www.sikausa.com) or by calling 800-933-7452.

Prior to each use of any Sika product, the user must always read and follow the warnings and instructions on the product's most current Technical Data Sheet, product label and Material Safety Data Sheet which are available online at [www.sikausa.com](http://www.sikausa.com) or by calling Sika's Technical Service Department at 800-933-7452. Nothing contained in any Sika materials relieves the user of the obligation to read and follow the warnings and instruction for each Sika product as set forth in the current Technical Data Sheet, product label and Material Safety Data Sheet prior to product use.

**LIMITED WARRANTY:** 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 Technical Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor. **NO OTHER WARRANTIES EXPRESS OR IMPLIED SHALL APPLY INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SIKASHALL NOT BELIEVABLE UNDER ANY LEGAL THEORY FOR SPECIAL OR CONSEQUENTIAL DAMAGES. SIKASHALL NOT BE RESPONSIBLE FOR THE USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT OR ANY OTHER INTELLECTUAL PROPERTY RIGHTS HELD BY OTHERS.**

Visit our website at [www.sikausa.com](http://www.sikausa.com)

1-800-933-SIKA NATIONWIDE

**Regional Information and Sales Centers.** For the location of your nearest Sika sales office, contact your regional center.

**Sika Corporation**  
201 Polito Avenue  
Lyndhurst, NJ 07071  
Phone: 800-933-7452  
Fax: 201-933-6225

**Sika Canada Inc.**  
601 Delmar Avenue  
Pointe Claire  
Quebec H9R 4A9  
Phone: 514-697-2610  
Fax: 514-694-2792

**Sika Mexicana S.A. de C.V.**  
Carretera Libre Celaya Km. 8.5  
Fracc. Industrial Balvanera  
Corregidora, Queretaro  
C.P. 76920  
Phone: 52 442 2385800  
Fax: 52 442 2250537



Sika, Sikadur, and SikaWrap are registered trademarks. Printed in Canada.

