

# PRODUCT DATA SHEET

## SikaWrap® Hex-113 C

### BI-DIRECTIONAL CARBON FIBER FABRIC FOR STRUCTURAL STRENGTHENING

#### PRODUCT DESCRIPTION

SikaWrap® Hex-113 C is a bi-directional carbon fiber fabric. Material is field laminated using Sikadur® 300/Hex 300, Sikadur® 301 or Sikadur® Hex 330 epoxy to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural elements.

#### USES

SikaWrap® Hex-113 C may only be used by experienced professionals.

##### 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

#### CHARACTERISTICS / 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

#### PRODUCT INFORMATION

|            |                         |
|------------|-------------------------|
| Fiber Type | 0°/90° (bi-directional) |
|------------|-------------------------|

|   |  |
|---|--|
| <b>Packaging</b>                                  | Rolls: 50 in. (1.3 m) x 300 ft. (91.4 m) |
| <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 Density</b>                          | 0.065 lb./in <sup>3</sup> (1.8 g/cc)     |
| <b>Area Density</b>                               | 5.7 osy (196 gsm)                        |
| <b>Dry Fibre Tensile Strength</b>                 | 5 x 10 <sup>5</sup> psi (3,450 MPa)      |
| <b>Dry Fibre Modulus of Elasticity in Tension</b> | 33.4 x 10 <sup>6</sup> psi (230,000 MPa) |
| <b>Dry Fibre Elongation at Break</b>              | 1.5 %                                    |

## TECHNICAL INFORMATION

|                              |  |   |
|------------------------------|--|---|
| <b>Nominal Ply Thickness</b> | <b>Design Value</b> 0.010 in. (0.25 mm)                      | 73 °F (23 °C)<br>50 % R.H.                  |
| <b>Tensile Strength</b>      | <b>Design Value</b> 66,000 psi (456 MPa)                     | (ASTM D-3039)<br>73 °F (23 °C)<br>50 % R.H. |
|                              | <b>Design Value (Per Inch Width)</b> 660 lbs/layer (2.92 kN) | (ASTM D-7565)<br>73 °F (23 °C)<br>50 % R.H. |
| <b>Tensile Modulus</b>       | <b>Design Value</b> 6.0 x 10 <sup>6</sup> psi (41,400 MPa)   | (ASTM D-3039)<br>73 °F (23 °C)<br>50 % R.H. |
| <b>Tensile % Elongation</b>  | <b>Design Value</b> 1.2 %                                    | (ASTM D-3039)<br>73 °F (23 °C)<br>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 Sikadur® Hex 300 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/Hex 300, Sikadur® 301 or Sikadur® 330 product data sheets for information.

### APPLICATION METHOD / TOOLS

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

**Dry Lay-Up:** Apply the mixed Sikadur® 330 or Sikadur® 301 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 or Sikadur® 301 at a rate of 100 ft<sup>2</sup>/gal. (16 mils) and repeat as above. Apply a final coat of Sikadur® 330 or Sikadur® 301 to the exposed surface at a rate of 160 ft<sup>2</sup>/gal. (10 mils).

**Wet Lay-Up:** Seal the prepared concrete surface using Sikadur® 300/Hex 300 or Sikadur® 301. Material may be applied by spray, brush or roller. SikaWrap® Hex-113 C can be impregnated using the Sikadur® 300/Hex 300 or

Sikadur® 301 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.

### **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](http://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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