

SikaWrap® Hex 117C

Carbon fiber fabric for structural strengthening

Description	SikaWrap Hex 117C is a unidirectional carbon fiber fabric. Material is field laminated using either Sikadur 300, Sikadur Hex 300/306 or Sikadur 330 epoxy to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural elements.
Where to Use	<p>Load increases</p> <ul style="list-style-type: none">■ Increased live loads in warehouses■ Increased traffic volumes on bridges■ Installation of heavy machinery in industrial buildings■ Vibrating structures■ Changes of building utilization <p>Seismic strengthening</p> <ul style="list-style-type: none">■ Column wrapping■ Masonry walls <p>Damage to structural parts</p> <ul style="list-style-type: none">■ Aging of construction materials■ Vehicle impact■ Fire <p>Change in structural system</p> <ul style="list-style-type: none">■ Removal of walls or columns■ Removal of slab sections for openings <p>Design or construction defects</p> <ul style="list-style-type: none">■ Insufficient reinforcements■ Insufficient structural depth
Advantages	<ul style="list-style-type: none">■ Lightweight fabric ideal for confined spaces■ 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: 12 in. x 300 ft. 24 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°-95°F (4°-35°C)

Color Black

Primary Fiber Direction 0° (unidirectional)

Weight per Square Yard 9.0 oz. (300 g/m²)

Cured Laminate Properties Design Values

Tensile Strength 1.05 x 10⁵ psi (724 MPa)

Modulus of Elasticity 8.2 x 10⁶ psi (56,500 MPa)

Elongation at Break 1.0%

Thickness 0.02 in. (0.51 mm)

Strength per Inch Width 2,100 lbs./layer (9.3 kN)

Fiber Properties

Tensile Strength 550,000 psi (3,793 MPa)

Tensile Modulus 34 x 10⁶ psi (234,000 MPa)

Elongation 1.5%

Density 0.065 lbs/in³ (1.8 g/cc)

Construction



Sika®

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 sheet for information on epoxy resin.

Application

SikaWrap Hex 117C 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.²/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.²/gal. (16 mils) and repeat as above. Apply a final coat of Sikadur 330 to the exposed surface at a rate of 160ft.²/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 117C 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 saturation device. 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. For overhead or vertical applications, prime concrete with Sikadur 330 to improve tack. Saturate fabric with Sikadur 300, Sikadur Hex 300 or Sikadur Hex 306. 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

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