BUILDING TRUST

PRODUCT DATA SHEET

SikaWrap® Hex-230 C

Carbon fibre fabric for structural strengthening

PRODUCT DESCRIPTION

SikaWrap® Hex-230 C is a unidirectional carbon fiber fabric. Material is field laminated using Sikadur 300, Sikadur Hex 300/306 or Sikadur 330 epoxy to form a carbon fiber reinforced polymer (CFRP) used to strengthen structural elements.

USES

SikaWrap® Hex-230 C may only be used by experienced professionals.

Load increase
- 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

APPROVALS / STANDARDS

- Approved by ICC ESR-3288
- IBC 2015 Compliance

PRODUCT INFORMATION

Fiber Type	0° (unidirectional)
Packaging	Rolls: 12 in. x 150 ft.; 24 in. x 150 ft.
Shelf Life	10 years
Storage Conditions	Store dry at 40°-95°F (4°-35°C)
Dry Fibre Density	0.065 lbs./in³ (1.8 g/cm³)

Dry Fibre Thickness	0.005 in. (0.128mm)
Area Density	6.7 oz./yd² (230 g/m²)
Dry Fibre Tensile Strength	500 ksi (3,450 MPa)
Dry Fibre Modulus of Elasticity in Tension	33,4000 ksi (230 GPa)
Dry Fibre Elongation at Break	1.5 %

TECHNICAL INFORMATION

Nominal Ply Thickness -

Average Ultimate Value	Design Value
-	0.015 in (0.381 mm)

*Average ultimate value minus 3 standard deviations

Tensile Strength (ASTM D-3039)

Average Ultimate Value	Design Value
135.3 ksi (933 MPa)	116.1 ksi (801 MPa)*

*Average ultimate value minus 3 standard deviations

(ASTM D-7565)

Average Ultimate Value	Design Value
-	1.7 kips/in./ply [116.1 ksi*0.015 in²=1.7 kips/in/ply]

Tensile Modulus (ASTM D-3039)

Average Ultimate Value	Design Value
-	10.83 msi (74.7 GPa)(E_f)

Tensile % Elongation (ASTM D-3039)

Average Ultimate Value	Design Value
1.25%	1.01%*

*Average ultimate value minus 3 standard deviations

Tensile Stiffness (ASTM D-7565)

Average Ultimate Value	Design Value
-	163 kips/in./ply

*Average ultimate value minus 3 standard deviations

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® 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, shot blast 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® Hex 300 or Sikadur® 330 technical data sheets for information on epoxy resins.

APPLICATION METHOD / TOOLS

SikaWrap® Hex-230 C 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-230 C 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 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. 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.

Cutting SikaWrap® Hex-230 C
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 Safety Data Sheet 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
- 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 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**

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