Construction

**Product Data Sheet**
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SikaWrap Hex 107G

# SikaWrap® Hex 107G

## Glass fiber fabric for structural strengthening

**Description**

SikaWrap Hex 107G is a unidirectional E-glass fiber fabric designed for strengthening concrete, timber and masonry. SikaWrap Hex 107G is reinforced in the weft direction with aramid fibers. SikaWrap Hex 107G is field laminated and bonded to the structure using Sikadur 300, Sikadur Hex 300 or Sikadur Hex 306 epoxy to form a glass fiber reinforced polymer (GFRP) used to strengthen structural elements. SikaWrap Hex 107G is pre-qualified for use on California Department of Transportation (Caltrans) projects.

**Where to Use**

**Load increases**
**Seismic strengthening of:**
- Columns
- Masonry walls

**Damage to structural parts**
**Temporary strengthening**
**Change in structural system**
**Design or construction defects**

**Advantages**

- Approved by ICBO/ICC ER-5558.
- Pre-qualified for use on specific Caltrans projects.
- Used for shear, confinement or flexural strengthening.
- Flexible, can be wrapped around complex shapes.
- Light weight.
- Non-corrosive.
- Acid resistant.
- Low aesthetic impact.
- Economical.

**Possible Applications**

- Bridges
- Parking Structures
- Buildings
- Marine Structures
- Civil/Environmental Facilities

**Packaging**

Rolls: 50 in. x 150 ft.

## 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 following 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.
**Surface Levelness/Irregularities:** Maximum allowable deviation in 3 ft. (1 m) shall be limited to 1/4" (6 mm) but no greater than 1/8" (3 mm) per foot. Any sharp edges (i.e. fins, formmarks, etc.) must be ground smooth and flush.

## Typical Data

| | |
|---|---|
| **Storage Conditions** | Store dry at 40°-95°F (4°-35°C) |
| **Color** | White (yellow weft fibers) |
| **Primary Fiber Direction** | 0° (unidirectional) |
| **Weight per Square Yard** | 27 oz. (913g/m$^2$) |
| ***Fiber Properties*** | |
| **Tensile Strength** | 3.3 x 10$^5$ (2,276 MPa) |
| **Tensile Modulus** | 10.5 x 10$^6$ psi (72,413 MPa) |
| **Elongation** | 4% |
| **Density** | 0.092 lbs./in.$^3$ (2.54 g/cc) |

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**Cured Laminate Properties with Sikadur Hex 300 Epoxy Properties after standard cure followed by standard post cure [70° -75° F (21° -24° C) - 5 days, 48 hours at 140° F (60° C)]**

| Property | Average Value[1] US Units psi | Average Value[1] SI Units MPa | Average Value[2] US Units psi | Average Value[2] SI Units MPa | ASTM Test Method |
|---|---|---|---|---|---|
| Tensile Strength* | 94,000 | 648 | 86,600 | 597 | D-3039 |
| Tensile Modulus* | 3,794,100 | 26,141 | 3,567,500 | 24,580 | D-3039 |
| Tensile % Elongation* | 2.57 | 2.57 | 2.33 | 2.33 | D-3039 |
| 140F - Tensile Strength | 87,500 | 603 | 83,300 | 574 | D-3039 |
| 140F - Tensile Modulus | 3,661,900 | 25,230 | 3,496,900 | 24,094 | D-3039 |
| 140F - % Elongation | 2.55 | 2.55 | 2.43 | 2.43 | D-3039 |
| Compressive Strength | 83,000 | 572 | 71,800 | 495 | D-695 |
| Compressive Modulus | 4,281,400 | 29,499 | 3,224,600 | 22,217 | D-695 |
| 90 deg Tensile Strength | 7,200 | 50 | 4,600 | 32 | D-3039 |
| 90 deg Tensile Modulus | 1,245,000 | 8,578 | 977,400 | 6,734 | D-3039 |
| 90 deg % Tensile Elongation | 1.20 | 1.20 | 1.08 | 1.08 | D-3039 |
| Shear Strength +/-45 in. Plane | 6,500 | 45 | 6,300 | 43 | D-3518 |
| Shear Modulus +/-45 in. Plane | 345,400 | 2,380 | 160,800 | 1,108 | D-3518 |
| Ply Thickness (inch/mm) | 0.04 | 1.016 | --- | --- | --- |

* 24 sample coupons per test series; all other values based on 6 coupon test series
[1] Average value of test series
[2] Average value minus 2 standard deviations

**Cured Laminate Properties with Sikadur Hex 300 Epoxy Properties after standard cure followed by standard post cure [70° -75° F (21° -24° C) - 5 days, 48 hours at 140° F (60° C)]**

| Property | Average Value[1] US Units psi | Average Value[1] SI Units MPa | Average Value[2] US Units psi | Average Value[2] SI Units MPa | ASTM Test Method |
|---|---|---|---|---|---|
| Tensile Strength* | 87,600 | 604 | 79,000 | 544 | D-3039 |
| Tensile Modulus* | 3,706,900 | 25,541 | 3,476,900 | 23,956 | D-3039 |
| Tensile % Elongation* | 2.43 | 2.43 | 2.18 | 2.18 | D-3039 |
| 140F - Tensile Strength | 72,700 | 501 | 67,100 | 462 | D-3039 |
| 140F - Tensile Modulus | 3,327,700 | 22,928 | 3,134,500 | 21,597 | D-3039 |
| 140F - % Elongation | 2.34 | 2.34 | 2.12 | 2.12 | D-3039 |
| Compressive Strength | 72,000 | 496 | 59,400 | 409 | D-695 |
| Compressive Modulus | 4,075,300 | 28,079 | 3,576,100 | 24,639 | D-695 |
| 90 deg Tensile Strength | 6,800 | 47 | 3,400 | 23 | D-3039 |
| 90 deg Tensile Modulus | 1,045,400 | 7,203 | 985,200 | 6,788 | D-3039 |
| 90 deg % Tensile Elongation | 0.78 | 0.78 | 0.60 | 0.60 | D-3039 |
| Shear Strength +/-45 in. Plane | 9,300 | 64 | 8,500 | 59 | D-3518 |
| Shear Modulus +/-45 in. Plane | 334,400 | 2,304 | 316,600 | 2,181 | D-3518 |
| Ply Thickness (inch/mm) | 0.04 | 1.016 | --- | --- | --- |

* 24 sample coupons per test series; all other values based on 6 coupon test series
[1] Average value of test series
[2] Average value minus 2 standard deviations

**Preparation Work: Concrete** - Blast clean, shotblast or use other approved mechanical means to provide an open roughened texture. Corners of structural elements to be wrapped must be rounded to a minimum radius of 1/2" (13 mm).

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 either Sikadur 300 or Sikadur Hex 300/306 technical data sheets for information on epoxy resins.

## Application

Prior to placing the fabric, the concrete surface is sealed using either Sikadur 300 or Sikadur Hex 300 epoxy. Material may be applied by spray, brush or roller. SikaWrap Hex 107G can be impregnated using either the Sikadur 300, Sikadur Hex 300 or Sikadur Hex 306 epoxy. For best results on larger projects, the impregnation process should be accomplished using a mechanically driven fabric saturator. In special cases where the size of the project does not justify the use of a saturator, the fabric may be saturated by hand using a roller prior to placement. In either case, installation of this system should be performed only by a specially trained, approved contractor.

For overhead or vertical applications, prime concrete with Sikadur 30 or Sikadur 330 to improve tack. Saturate fabric with Sikadur 300, Sikadur Hex 300 or Sikadur Hex 306.

## 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 "glass 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 glass dust generated by the cutting procedure. Use of an appropriate, properly fitted NIOSH approved respirator is recommended.



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

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