BUILDING TRUST
CONSTRUIRE LA CONFIANCE

PRODUCT DATA SHEET

SikaWrap® Hex-103 C

CARBON FIBRE FABRIC FOR STRUCTURAL STRENGTHENING

PRODUCT DESCRIPTION

SikaWrap® Hex-103 C is a high-strength, high-modulus, unidirectional carbon fibre fabric. Material is field laminated using Sikadur®-300 epoxy to form a carbon fibre reinforced polymer (CFRP) used to strengthen structural elements.

WHERE TO USE

SikaWrap® Hex-103 C may only be used by experienced professionals.

Loading increases
- Increasing the live loads in warehouses
- Increased traffic volumes on bridges
- Installation of heavy machinery in industrial buildings
- Vibrating structures
- Changes of building utilization

Seismic strengthening
- Columns
- 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

- Used for shear, confinement, seismic or flexural strengthening
- Flexible, can be wrapped around complex geometries
- High modulus of elasticity
- Lightweight
- Non-corrosive
- Alkali resistant
- Low aesthetic impact

APPROVALS / CERTIFICATES

- Approved by ICBO ER-5558
- Approved by ICC ESR-3288 (certain conditions apply, consult Sika Canada)
- Product recognized by the British Columbia Ministry of Transportation (BC MoT)

PRODUCT INFORMATION

CSC MasterFormat®	03 25 00 | COMPOSITE REINFORCING
Fibre Type	0° (unidirectional)
Packaging	Roll, 635 mm x 91.4 m or 635 mm x 15.2 m (Roll, 25 in x 300 ft or 25 in x 50 ft) 635 mm x 91.4 m (25 in x 300 ft) 635 mm x 15.2 m (25 in x 50 ft)
Shelf Life	Unlimited, if stored properly in original, unopenend, undamaged packaging.

Storage Conditions	Store dry between +4 °C and +35 °C (+40 °F and +95 °F).
Dry Fibre Thickness	0.34 mm (0.0135 in)
Area Density	1.8 g/cm³ (0.065 lb/in³)
Mass per Unit Length	611 g/m² (18 oz/y²)
Dry Fibre Tensile Strength	3.79 GPa (5.5 x 10^5 psi)
Dry Fibre Modulus of Elasticity in Tension	234.5 GPa (34 x 10^6 psi)
Dry Fibre Elongation at Break	1.5 %

TECHNICAL INFORMATION

Laminate Nominal Thickness	1.016 mm (0.04 in)		
Laminate Tensile Strength	**Average Value**[1] 1 248 MPa (1.81 x 10^5 psi)	**Design Value**[2] 1 110 MPa (1.60 x 10^5 psi)	(ASTM D3039) with Sikadur®-300 at +23 °C (+73 °F), 50 % R.H.
	Average Value -	**Design Value** 11.2 kN/cm/ply (6.4 kips/in/ply)	(ASTM D7565) with Sikadur®-300 at +23 °C (+73 °F), 50 % R.H.
	[1] Average value of test series [2] Average value minus 3 standard deviations		
Laminate Modulus of Elasticity in Tension	**Average Value**[1] -	**Design Value**[2] 71 700 MPa (1.039 x 10^6 psi)	(ASTM D3039) with Sikadur®-300 at +23 °C (+73 °F), 50 % R.H.
	[1] Average value of test series [2] Average value minus 3 standard deviations		
Laminate Elongation at Break in Tension	**Average value**[1] 1.75 %	**Design value**[2] 1.45 %	(ASTM D3039) with Sikadur®-300 at +23 °C (+73 °F), 50 % R.H.
	[1] Average value of test series [2] Average value minus 3 standard deviations		
Tensile Stiffness	**Average Value**[1] -	**Design Value**[2] 728 kN/cm/ply (416 kips/in/ply)	(ASTM D7565) with Sikadur®-300 at +23 °C (+73 °F), 50 % R.H.
	[1] Average value of test series [2] Average value minus 3 standard deviations		

BASIS OF PRODUCT DATA

Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including environment, preparation, application, curing and test methods.

LIMITATIONS

- Design calculations for the SikaWrap® Hex-103 C system must be made and certified by an independent licensed professional engineer.
- The SikaWrap® Hex-103 C system constitutes a vapour barrier.
- Protect the SikaWrap® Hex-103 C system from UV using Sikagard®-550 W Elastic or a similarly compatible Sika® coating.

ENVIRONMENT, HEALTH & SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

Prepare the concrete surface by sandblasting or grinding (CSP 3 - 4 as per ICRI). Remove any dust or loose particles by means of an industrial vacuum cleaner. The surface must be clean, free from grease and oil and should be dry with the maximum substrate moisture content of < 4 % by weight. The surface to be bonded must be level, with no irregularities or protrusion > 0.5 mm (20 mil). Larger deviations must be levelled with Sikadur®-30, extended with (mix. ratio 1:1 parts by volume) oven-dried silica sand for thicknesses over 3 mm (1/8 in). The concrete adhesive strength must be verified following surface preparation by random pull-off testing (ACI 503R) at the engineer's discretion. Minimum tensile strength, 1.5 MPa (218 psi) with concrete substrate failure. All corners of the structure must be rounded to a radius of 12 mm (1/2 in).

APPLICATION

Mixing
Consult Sikadur®-300 or 330 Product Data Sheet for information on epoxy resin.
Application
Cutting SikaWrap®
Fabric can be cut to appropriate length using commercial quality, heavy-duty scissors. Since dull or worn cutting implements can damage, weaken or fray the fibre, their use should be avoided.
Priming and Saturating
Prior to placing the fabric, prime concrete with Sikadur®-300 or Sikadur®-330 (Sikadur®-330 provides improved 'tack' adhesion, especially useful for overhead or similarly demanding applications). Sikadur® products may be spray, brush or roller applied. Saturate the SikaWrap® Hex-103 C using Sikadur®-300 epoxy. For best results on larger projects, the saturation process should be accomplished using an AMI Custom Fabric Saturator or similar device.

Sika Canada Inc.
Head Office
601, avenue Delmar
Pointe-Claire, Quebec
H9R 4A9
1-800-933-SIKA
www.sika.ca

Other locations
Boisbriand (Quebec)
Brantford; Cambridge;
Sudbury; Toronto (Ontario)
Edmonton (Alberta)
Surrey (British Columbia)

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 or a spatula, prior to placement.
Protection and overlayment
At low temperatures and/or high relative humidity it may be longer than 12 hours for the surface may become slightly tacky (amine blush). Before laying up another layer of fabric or a coating, the tackiness must be removed. This can be accomplished by washing the surface with a wet sponge or rinsing with water. To avoid this phenomenon, use the **SikaWrap® Peel Ply** (please see below). To prevent exposure of the strengthening fabric to direct sunlight, top coat with Sikagard®-550 W Elastic, Sikagard® Color A50 Lo-VOC or other acceptable product. To adhere cementitious top coat systems to the cured epoxy, apply an additional layer of epoxy (15 - 20 mil) and blind (broadcast) the surface with silica sand to promote adhesion before coating.
SikaWrap® Peel Ply
If the product needs to be overcoated either with a coating (Sikagard®, etc.) or with a extra layer of fabric passing the overlay delay, apply the SikaWrap® Peel Ply **immediately after the fabric installation**, in order to protect and provide a textured surface (consult SikaWrap® Peel Ply Product Data Sheet for more informations).

LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

LEGAL NOTES