



PRODUCT DATA SHEET

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COMPOSITE REINFORCING

SikaWrap®-900 C

CARBON FIBRE FABRIC FOR STRUCTURAL STRENGTHENING

Description	SikaWrap®-900 C is a uni-directional, fleece stabilised and stitched, heavy carbon fibre fabric for the wet application process of structural strengthening.
Where to Use	<p>Strengthening of reinforced concrete, masonry, brick and timber structures to increase flexural and shear load capacity for:</p> <ul style="list-style-type: none"> Prevention of defects caused by seismic events. Blast mitigation (accidental or terrorism). Improvement of seismic performance of masonry walls. Substitution of missing reinforcing steel. Increasing strength and ductility of columns. Increasing loading capacity of structural elements. Changes in building use. Remedying structural design and construction defects. Improving serviceability. Structural upgrading to comply with codes or standards.
Advantages	<ul style="list-style-type: none"> Multifunctional use in virtually every aspect of strengthening. Produced with a stabilising fleece to keep the fabric sure. Flexibility of surface geometry accommodates beams, columns, chimneys, piles, walls, and silos. Low density minimising additional weight. Non-corrosive. Alkali resistant. Low aesthetic impact. Economical compared to traditional techniques of strengthening. Product recognized by the British Columbia Ministry of Transportation (BC MoT).

Technical Data					
Packaging	Rolls: 300 mm x 30 m (11,8 in x 98 ft), two rolls per carton				
Colour	Black				
Shelf Life	Unlimited. Store dry between 5 and 32 °C (41 and 89 °F) and protect from damage or contamination.				
Fibre Properties					
Primary fibre direction	0° (unidirectional: fleece stitched in weft direction with white stitch yarn [4 % of total areal weight])				
Carbon content	96 % (warp mid strength carbon fibres)				
Tensile strength	3800 MPa (551 Ksi)				
Tensile modulus	242 GPa (35 Msi)				
Elongation	1.55 %				
Density	1.8 g/cm³ (0.065 lb/in³)				
Areal weight	900 g/m² (1.66 lb/yd²) +/- 45 g/m² (0.08 lb/yd²) total areal weight 865 g/m² (1.59 lb/yd²) +/- 45 g/m² (0.08 lb/yd²) carbon fibre content				
Fabric design thickness	0.48 mm (0.0189 in) based on fibre content				
Electrical resistivity	0.00155 ohm-cm (0.00061 ohm-in)				
Laminate Properties with Sikadur®-300 Epoxy	[21 to 24 °C (70 to 75 °F)/5 days]				
Property	Average value ¹		Design value ²		ASTM Test Method
	MPa	(psi)	MPa	(psi)	
Tensile strength³	1120	(1.62 x 10 ⁵)	1012	(1.47 x 10 ⁵)	D3039
Tensile modulus	100 000	(14.5 x 10 ⁶)	94 000	(13.63 x 10 ⁶)	D3039
Tensile elongation	1.1 %	(1.1 %)	0.98 %	(0.98 %)	D3039
Ply thickness	1.3 mm	(0.05 in)	1.3 mm	(0.05 in)	-
Tensile strength per inch width	37 kN	(8313 lbf)	33.4 kN	(7512 lbf)	D3039

¹Average values derived from test series.
²Average values minus 2 standard deviations.
³Tensile strength values represent ultimate strengths.

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.

HOW TO USE

Surface 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 mils). 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 20 mm (4/5 in).

Mixing Consult Sikadur®-300 or Sikadur®-330 Product Data Sheets 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®-900 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. 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 mils) 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 an 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).

Limitations

- Design calculations for the SikaWrap®-900 C system must be made and certified by an independent, licensed professional engineer.
- Minimum radius for application around corners must be > 20 mm (4/5 in).
- Overlapping of the fabric in the fibre direction must be at least 200 mm (8 in)
- Side by side application of fabric requires no overlap in the weft direction.
- Overlap joints in multiple layers must be evenly positioned about the circumference of columns.
- The SikaWrap®-900 C system constitutes a vapour barrier.
- Protect the SikaWrap®-900 C system from UV using Sikagard®-550 W Elastic or a similarly compatible Sika® coating.
- Installation of the SikaWrap®-900 C system should only be performed by specially trained and Sika Canada recommended contractors.

Health and Safety Information For information and advice on the safe handling, storage and disposal of chemical products, users should refer to the most recent SAFETY DATA SHEET containing physical, ecological, toxicological and other safety-related data.

KEEP OUT OF REACH OF CHILDREN
FOR INDUSTRIAL USE ONLY

The Information, and in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions, within their shelflife. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any recommendations, or from any other advice offered. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request or may be downloaded from our website at: www.sika.ca

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