

## PRODUCT DATA SHEET

# SikaWrap®-380 C Quadri

Carbon fibre, multiaxial (4 ways orientation), high-strength fabric with a fibre area density of 380 g/m<sup>2</sup> designed for dry application

### DESCRIPTION

SikaWrap®-380 C Quadri is a multi-axial woven carbon fibre fabric. The Product is made of high strength carbon fibres with an area density of 380 g/m<sup>2</sup>. The fabric is designed for installation using the dry application process.

### USES

SikaWrap®-380 C Quadri may only be used by experienced professionals.

SikaWrap®-380 C Quadri is used as a reinforcement fabric for externally bonded structural strengthening systems on concrete, masonry and wooden substrates.

- Increasing the flexural and shear loading capacity of elements and structures
- Enhancing the load-carrying capacity or ductility of structural members in compression
- Replacing missing steel reinforcement
- Structural upgrading of weak concrete elements or structures
- Improving impact resistance
- Passive strengthening for seismic event protection

Please note:

- A specialist structural engineer must be consulted for any structural strengthening design calculation.

### CHARACTERISTICS / ADVANTAGES

- Improves the service life of a structure
- Multifunctional fabric for use in many different strengthening applications
- Flexible and accommodating to different surface planes and geometry (such as beams, columns, chimneys, piles, walls, soffits and silos)
- Available in different widths for optimum utilisation
- Low density for minimal additional weight
- 4 ways orientation woven carbon fibre fabric

### APPROVALS / STANDARDS

- Italy: Certificate of Technical Evaluation according to "Linea Guida per l'identificazione, la qualificazione ed il controllo di accettazione di compositi fibrorinforzati a matrice polimerica (FRP) da utilizzarsi per il consolidamento strutturale di costruzioni esistenti."

## PRODUCT INFORMATION

|                     |  |   |                              |
|---------------------|--|---|------------------------------|
| Construction        | Fiber orientation  | 0° / 90° / +45° / -45°  |                              |
|                     | Warping  | Warping Non-warp carbon fiber fabric (97.5%), stabilized with polyester yarn (2.5%) |                              |
| Fibre Type          | High-strength carbon fiber   |   |                              |
| Packaging           |  | Lenght  | Width                        |
|                     | Roll   | 50 m  | 630 mm                       |
|                     | Roll   | 50 m  | 1270 mm<br>(only on request) |
| Shelf Life          | 24 month from date of production   |   |                              |
| Storage Conditions  | Store the product in the original sealed packages dry and protected from moisture at temperatures between +5°C and +35°C.<br>Protect from direct sunlight. |   |                              |
| Effective Thickness | 0.205 mm on total carbon fiber area  |   |                              |
|                     | 0°   | 0.053 mm  |                              |
|                     | +45°   | 0.048 mm  |                              |
|                     | 90°  | 0.059 mm  |                              |
|                     | -45°   | 0.048 mm  |                              |
| Density             | 380 g/m <sup>2</sup> (just only for fibers)  |   |                              |
| Cross section       | 205 mm <sup>2</sup> /m on total carbon fiber area  |   |                              |
|                     | 0°   | 53 mm <sup>2</sup> /m   |                              |
|                     | +45°   | 48 mm <sup>2</sup> /m   |                              |
|                     | 90°  | 59 mm <sup>2</sup> /m   |                              |
|                     | -45°   | 48 mm <sup>2</sup> /m   |                              |

## TECHNICAL INFORMATION

|   |  |   |   |
|---|--|---|---|
| Dry Fibre Properties                    | Dry fiber density  | ~ 1,80 g/cm <sup>3</sup>                  |   |
|   | Dry fibre tensile strength   | Minimun Value ~ 4000 N/mm <sup>2</sup>    | Medium Value ~ 4900 N/mm <sup>2</sup> (ISO 10618) |
|   | Dry fibre modulus of elasticity in tension   | Minimun Value ~ 230 000 N/mm <sup>2</sup> |   |
|   | Dry fibre elongation at break  | ~ 2,1%                                    |   |
|   | Laminate Modulus of Elasticity in Tension  | Medium Value* ~ 270 000 N/mm <sup>2</sup> | (EN 2561)   |
| Elongation at Break                     | Medium Value* ~ 3970 N/mm <sup>2</sup>   | (EN 2561)                                 |   |
|   | Characteristic Value* ~ 3500 N/mm <sup>2</sup>   | (EN 2561)                                 |   |
| Laminate Elongation at Break in Tension | ~ 1,47%  |   |   |
|   | Values for fiber direction only in the 0° direction, referring to Group A (3-ply) tests. Laminate thickness ~ 1.89 mm. Fiber content by volume ~ 30%, by weight ~ 40%. |   |   |

## APPLICATION INFORMATION

### Consumption

|                                 |                           |
|---------------------------------|---------------------------|
| Dry application of Sikadur®-330 |                           |
| First layer as primer           | 1,0–1.5 kg/m <sup>2</sup> |
| successive layers               | 0,8 kg/m <sup>2</sup>     |

Consult the Method Statement of SikaWrap® systems.

## SYSTEM INFORMATION

### System Structure

The structure of the reinforcement system is as shown below and cannot be changed in any of its parts

|   |                        |
|---|------------------------|
| Adhesion primer on the substrate, leveling and impregnation | Sikadur®-330           |
| Fabric for structural reinforcement                         | SikaWrap®-380 C Quadri |

For detailed information on Sikadur®-330 and system application details, please refer to the Sikadur®-330 Product Data Sheets and the SikaWrap® Method Statement.

## BASIS OF PRODUCT DATA

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## LIMITATIONS

Reference must be made to the following Sika® Method Statements:

- 850 41 02 Method Statement SikaWrap® manual dry application
- 850 41 03 Method Statement SikaWrap® manual wet application

## ECOLOGY, HEALTH AND SAFETY

This product is an article as defined in article 3 of regulation (EC) No 1907/2006 (REACH). It contains no substances which are intended to be released from the article under normal or reasonably foreseeable conditions of use. A safety data sheet following article 31 of the same regulation is not needed to bring the product to the market, to transport or to use it. For safe use follow the instructions given in the product data sheet. Based on our current knowledge, this product does not contain SVHC (substances of very high concern) as listed in Annex XIV of the REACH regulation or on the candidate list published by the European Chemicals Agency in concentrations above 0,1 % (w/w).

## APPLICATION INSTRUCTIONS

### SUBSTRATE QUALITY

Tensile adhesion strength of the substrate must be a minimum of 1.0 N/mm<sup>2</sup> or as specified in the strengthening design. If necessary, verify this by applying a test area first. Refer to the relevant SikaWrap® Method Statement for further information.

### SUBSTRATE PREPARATION

Clean and prepare concrete to achieve a laitance-free, contaminant-free, open-textured surface. Refer to the relevant SikaWrap® Method Statement for further information.

### APPLICATION

#### IMPORTANT

#### Application by trained personnel

The application of this Product must only be carried out by an applicator that is trained or approved by Sika. The applicator must also be experienced in this type of application.

#### IMPORTANT

#### Strictly follow installation procedures

Strictly follow installation procedures as defined in Method Statements, application manuals and working instructions which must always be adjusted to the actual site conditions.

#### IMPORTANT

#### Do not interchange different system components

SikaWrap® fabrics are coated to ensure maximum bond and durability with the Sikadur® adhesives, impregnating and laminating resins. To maintain and ensure full system compatibility, do not interchange different system components.

1. IMPORTANT Never fold the fabric. Cut the fabric with special scissors, a razor knife or a box-cutter knife
2. Apply the SikaWrap fabric using the wet or dry application process. Refer to the relevant Method Statement for details on either the impregnating or laminating procedure:

- 850 41 02 Method Statement SikaWrap® manual dry application

#### OVERCOATING SIKAWRAP® FABRICS

SikaWrap® fabrics can be overcoated with a cementitious overlay or other coatings for aesthetic or protective purposes. The selection of the overcoating system depends on the exposure and project-specific requirements. For additional protection from UV light in exposed areas, use one of the following:

- Sikagard®-550 W Elastic
- Sikagard®-675 W ElastoColor
- Sikagard®-680 S Betoncolor
- Sikagard®-5500

## LOCAL RESTRICTIONS

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

## LEGAL NOTES

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 in accordance with Sika's recommendations. 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 written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. 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. It may be necessary to adapt the above disclaimer to specific local laws and regulations. Any changes to this disclaimer may only be implemented with permission of Sika® Corporate Legal in Baar.

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#### Product Data Sheet

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