BUILDING TRUST

PRODUCT DATA SHEET

Sika® CarboDur® BC

PULTRUDED CARBON FIBRE RODS FOR STRUCTURAL STRENGTHENING AS PART OF THE SIKA® CARBODUR® SYSTEM

DESCRIPTION

Sika® CarboDur® BC rods are pultruded carbon fibre reinforced polymer (CFRP) laminates with a circular cross section, designed for strengthening concrete, timber and masonry.
Sika® CarboDur® BC rods are bonded into slots as near surface mounted reinforcement using Sikadur®-330 or Sikadur®-30 epoxy resin based adhesives for normal application temperatures. Sikadur®-300 epoxy resin based adhesive is used for horizontal applications.
Sika® CarboDur® BC rods can also be used for anchoring SikaWrap® fabrics where positive attachment to concrete or masonry is required.
Please refer to the relevant Product Data Sheet for more detailed information about each of the adhesives.

USES

Sika® CarboDur® BC may only be used by experienced professionals.
Sika® CarboDur® BC rods are used to improve, increase or repair the performance and resistance of structures for:
Increased Load Carrying Capacity:
- Increasing the load capacity of floor slabs, beams and bridge sections
- For the installation of heavier machinery
- To stabilise vibrating structures
- For changes in building use

Damage to structural elements due to:
- Deterioration of the original construction materials
- Steel reinforcement corrosion
- Accidents (Vehicle impact, earthquakes, fire)

Improvement of serviceability and durability:
- Reduced deflection and crack width
- Stress reduction in the steel reinforcement
- Improved fatigue resistance

Change of the structural system:
- Removal of walls and / or columns
- Removal of floor and wall sections to create access / openings

Resistance to possible events:
- Increased resistance to earthquakes, impact or explosion etc.

To repair design or construction defects such as:
- Insufficient / inadequate reinforcement
- Insufficient / inadequate structural depth

Combination with other strengthening products:
- Doweling applications
- Anchoring of SikaWrap® fabrics

CHARACTERISTICS / ADVANTAGES

- Non-corroding
- Very high strength
- Invisible once installed, no joints required
- Excellent durability and fatigue resistance
- Easy transportation
- Lightweight, very easy to install
- Smooth edges without exposed fibres as the result of production by pultrusion
- Can accept traffic on the strengthened surface (rods not exposed)
- No surface preparation / levelling of uneven substrates required
- Improved resistance to fire (compared with externally bonded reinforcement)
- Testing and Approvals available from many countries worldwide

APPROVALS / CERTIFICATES

- Poland: Technical Approval IBDiM Nr AT/2008-03-0336/1 „Płaskowniki. pręty, kształtki i maty kompozytowe do wzmacniania betonu o nazwie handlowej: Zestaw materiałów Sika® CarboDur® do wzmacniania konstrukcji obiektów mostowych
- Fib, Technical Report, bulletin 14: Externally bonded FRP reinforcement for RC structures, July 2001
- Italy: CNR-DT 200/2004 - Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Existing Structures

PRODUCT INFORMATION

Packaging	Supplied in rolls of 100 m (BC 8, BC 10).
Appearance / Colour	Carbon fibre reinforced polymer with an epoxy matrix, black.
Shelf life	Unlimited, provided the storage conditions are met.
Storage conditions	Store in original, unopened, sealed and undamaged packaging in dry conditions at temperatures of max. +50 °C. Protect from direct sunlight. Transportation: only in the original packaging, or otherwise adequately protected against any mechanical damage
Density	1.60 g/cm^3

Dimensions

Type	Diameter	Cross sectional area
Sika® CarboDur® BC8	8 mm	50 mm^2
Sika® CarboDur® BC10	10 mm	79 mm^2

Fibre Volume Content	> 65 %

TECHNICAL INFORMATION

Laminate Tensile Strength	Mean value 5% Fractile value Values in the longitudinal direction of the fibres	~3 100 N/mm^2 ~2 900 N/mm^2	(EN 2561)
Laminate Modulus of Elasticity in Tension	Mean value Values in the longitudinal direction of the fibres	~148 000 N/mm^2	(EN 2561)
Laminate Elongation at Break in Tension	Minimum value Values in the longitudinal direction of the fibres	> 1.70 %	(EN 2561)
Glass Transition Temperature	> 100 °C		(EN 61006)

SYSTEMS

System Structure

The system build-up and configuration as described must be fully complied with and may not be changed.
Resin Adhesive – Sikadur®-330, Sikadur®-30
Structural strengthening Carbon plates – Sika® CarboDur® BC
For detailed information on the different resins, together with the application details, please refer to the latest Product Data Sheets and the "Method Statement Sika® CarboDur® Near Surface Mounted Reinforcement" Ref: 850 41 07

APPLICATION INFORMATION

Consumption	Sika® CarboDur® BC8	≤ 0.18 kg/m
	Sika® CarboDur® BC10	≤ 0.24 kg/m

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

Please refer to the "Method Statement Sika® CarboDur® Near Surface Mounted Reinforcement" Ref: 850 41 07

APPLICATION METHOD / TOOLS

Please refer to the relevant Product Data Sheet
- Sikadur®-30
- Sikadur®-330
- Sikadur®-300

Please refer to the "Method Statement Sika® CarboDur® Near Surface Mounted Reinforcement" Ref: 850 41 07

IMPORTANT CONSIDERATIONS

Please refer to the relevant Sika epoxy adhesive Product Data Sheet:
- Sikadur®-30
- Sikadur®-330
- Sikadur®-300

A suitably qualified Structural Engineer must be responsible for the design of the strengthening works. Additionally as this application is structural, great care must also be taken in selecting suitably experienced and trained specialist contractors.
Maximum permissible continuous service temperature is approx. +50 °C.
Please also refer to the “Method Statement Sika® CarboDur® Near Surface Mounted Reinforcement” Ref: 850 41 07 for further limitations and guidelines.
Contact Sika technical service for detailed advice.

BASIS OF PRODUCT DATA

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

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 the exact product data and uses.

ECOLOGY, HEALTH AND SAFETY

REGULATION (EC) NO 1907/2006 - REACH

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)

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.

PT. Sika Indonesia Head Office and
Jl. Raya Cibinong-Bekasi Km.20
Limusnunggal-Cileungsi
Bogor 16820-Indonesia
Tel. +62 21 8230025, Fax +62 21 8230026
Web: idn.sika.com
Email: sikacare@id.sika.com