BUILDING TRUST

PRODUCT DATA SHEET

Sika® CarboDur® S

Pultruded carbon fibre plates for structural strengthening as part of the Sika® CarboDur® system

DESCRIPTION

Sika® CarboDur® S plates are pultruded carbon fibre reinforced polymer (CFRP) laminates, designed for strengthening concrete, timber, masonry, steel and fibre reinforced polymer structures. The plates are bonded onto the structure as externally bonded reinforcement using Sikadur®-30 epoxy resin based adhesive for normal temperatures. Please refer to the relevant Product Data Sheet for more detailed information about each of these adhesives.

USES

Sika® CarboDur® S may only be used by experienced professionals.

Sika® CarboDur® S is used as a reinforcement plate for externally bonded structural strengthening systems on concrete, masonry, wood, steel and reinforced polymer substrates.
Externally bonded structural strengthening systems are used for:

- Enhancing the load-carrying capacity or ductility of structural members
- Increasing the flexural loading capacity of elements and structures
- Improving fatigue resistance
- Reducing the stress on steel reinforcement
- Structural upgrading of weak concrete elements or structures
- Replacing missing steel reinforcement
- Changing the structural system (removal of floor or wall sections)
- Repairing structural elements after damage (vehicle impact, fire, earthquake)
- Improving impact resistance
- Passive strengthening for seismic event protection

Please note:

- A specialist structural engineer must be consulted for any structural strengthening design calculation.
- The Product may only be used by experienced professionals.

FEATURES

- Very cost effective in comparison to traditional strengthening techniques
- Fast application increases productivity, saves time and reduces disruption
- Improves the service life of a structure
- Resistant to corrosion
- Very high strength
- Excellent durability and fatigue resistance
- Easy transport as a roll
- Low system thickness, simple execution of plate intersections and crossings
- Low density for minimal additional weight
- Lightweight, very easy to install, especially overhead (without temporary support)
- Smooth edges without exposed fibres as a result of production by pultrusion
- Extensive testing and approvals available from many countries worldwide

CERTIFICATES AND TEST REPORTS

- European Technical Assesment 21/0276 30/06/2021 EN
- Czech Republic: Technical Approval, ITC, Nr. STO-AO 224-1012/2020/a
- Technical Approval, CSTB, Avis Technique 3.3/20-1021_V1
- Certificate of Technical Valuation, CSLLPP, Certificate No. 259/2023
- National Technical Assessment Sika CarboDur® kit, ITB, Approval No. ITB-KOT-2018/0414 v.3
- Technical Approval Sika CarboDur, Nr. IBDiM-KOT-2019-0361 v.5
- Technical Agreement, CTPC, No. 016-01/488-2022

- Russia: Technical Certificate Sika® CarboDur®S, No. 6476-22
- Test Report, University of Belgrade, No. 270/2019
- Slovakia: Technical Assessment, TSUS, No. SK04-ZSV-2669
- Technical Approval, DIT, No. N604R/19
- Test Report, Ministry of Regional Development (Ukraine), No. 3HT–219–2167.13-001

PRODUCT INFORMATION

Packaging	Supplied in rolls of 100 m.
Colour	Black
Shelf life	5 years from date of production
Storage conditions	Store in original, unopened, sealed and undamaged packaging in dry conditions at temperatures of max. +50 °C. Protect from direct sunlight. Transport only in the original packaging, or otherwise adequately protected against any mechanical damage
Density	1.60 g/cm³

Dimensions

Sika® CarboDur® S	Width	Thickness	Cross section area
512	50 mm	1.2 mm	60 mm²
812	80 mm	1.2 mm	96 mm²
1012	100 mm	1.2 mm	120 mm²

Fibre volume content	> 68 %		
Appearance	Carbon fibre-reinforced polymer with an epoxy matrix		

TECHNICAL INFORMATION

Laminate tensile strength	Mean	3100 N/mm²	(ASTM D3039)
	Characteristic (ACI 440.2R)	2900 N/mm²	
	Values in the longitudinal direction of the fibres		
Laminate modulus of elasticity in tension	Mean	165 kN/mm²	(ASTM D3039)
	Values in the longitudinal direction of the fibres		
Laminate elongation at break in tension	Mean	1.80 %	(EN 2561)
	Values in the longitudinal direction of the fibres		
Glass transition temperature	> +100 °C		(EN 61006)

APPLICATION INFORMATION

Consumption

Width of Sika® CarboDur® S plate	Typical consumption of Sikadur®-30
50 mm	0.20–0.28 kg/m²
80 mm	0.32–0.44 kg/m²
100 mm	0.44–0.64 kg/m²

Note: Consumption is for standard application only. Rough or uneven substrate surfaces, plate crossings, loss and wastage can lead to a higher adhesive consumption of up to 20 %.

SYSTEM INFORMATION

System structure

The system build-up and configuration as described must be fully complied with and may not be changed.

Resin adhesive	Sikadur®-30
Structural strengthening carbon plates	Sika® CarboDur® S

For detailed information on Sikadur®-30, together with the resin and plate application details, please refer to the individual Product Data Sheets and Ref: Sika Method Statement 850 41 05 Sika® CarboDur® System.

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.

FURTHER DOCUMENTATION

Reference must be made to the following Sika® Method Statements:
- Sika Method Statement 850 41 05 Sika® CarboDur® System

Reference must be made to the following Product Data Sheets:
- Sikadur®-30

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

SIKA® CARBODUR® PLATES EXTERNALLY BONDED TO THE CONCRETE SURFACE
Recommended minimum concrete pull-off strength after surface preparation:
- Mean: 2.0 N/mm²
- Minimum: 1.5 N/mm²

The effective concrete pull-off strength after surface preparation has to be verified. If concrete pull-off strength is below the stated minimum requirements, alternative Sika solutions are available:
- Sika® CarboDur® applied in slots as near surface mounted (NSM) reinforcement
- SikaWrap® fabrics: Please refer to the Product Data Sheet for the SikaWrap® fabrics

Concrete must generally be older than 28 days (dependent on curing conditions and the type of concrete).
SIKA® CARBODUR® EXTERNALLY BONDED TO OTHER SUBSTRATES
For the application of Sika® CarboDur® plates to all other substrates (brick, stone, steel, wood, fibre reinforced polymer) please refer to Ref: Sika Method Statement 850 41 05 Sika® CarboDur® System. Contact Sika Technical Service for detailed advice.

SUBSTRATE PREPARATION

Clean and prepare the concrete to achieve a laitance-free, contaminant-free, open-textured surface.
Refer to Ref: Sika Method Statement 850 41 05 Sika® CarboDur® System 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
Exposure to UV or weathering
The Product is not resistant to permanent UV exposure or weathering.
1. Contact Sika Technical Services for more information.

Maximum service temperature
Note: Maximum permissible continuous service temperature is approximately +50 °C. Refer to Sika Method Statement 850 41 05 Sika® CarboDur® System and contact Sika Technical Service for detailed advice.
Please refer to the relevant Product Data Sheets and method statement:
- The Product Data Sheet for Sikadur®-30
- Sika Method Statement 850 41 05 Sika® CarboDur® System

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

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.

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