**Sika® CarboDur®**

**Structural Strengthening Systems**

### CFRP Plates System Components

<table>
<thead>
<tr>
<th>Sika® CarboDur®</th>
<th>CFRP plates</th>
<th>Type S</th>
<th>Type M</th>
<th>Type UH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elastic modulus</td>
<td>165,000 N/mm²</td>
<td>210,000 N/mm²</td>
<td>400,000 N/mm²</td>
<td></td>
</tr>
<tr>
<td>Tensile strength</td>
<td>2800 N/mm²</td>
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<td>1800 N/mm²</td>
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### Sika® Prestressing Systems

Prestressing of Sika® CarboDur® plates over 200 kN (20 tons) with Sika® StressHead or Sika® LEOBA CarboDur® prestressing system.

### Sika® CarboHeater

Heating device

Fast application (2 – 3 hrs) of Sika® CarboDur® plates

### Sika® CarboSkeer L

L-shaped CFRP plates

Min. tensile load 120 kN/40 mm width 120 kN/mm²

### Sika® CarboShear® L

Epoxy adhesives and mortars

**Sikadur®**

- Application temperature
- Elastic modulus
- Bond strength
- Use

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<th>Min. tensile load</th>
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<td>10 – 35 °C</td>
<td>12,800 N/mm²</td>
<td>&gt; 4 N/mm²</td>
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### FRP Fabrics System Components

**SikaWrap®**

Several types of SikaWrap® FRP fabrics are available to meet the requirement of specifier and contractor. Unidirectional woven and non-woven fabrics made of glass, aramid and different types of carbon fibers are available. Bi-directional types can be offered with carbon and glass fibers. The range of areal weight is between 200 and 600 g/m² for carbon, 400 to 1000 g/m² for glass and 300 to 600 g/m² for aramid fiber fabrics. Further possibilities and fiber combinations are available on request.

**Sikadur®**

All SikaWrap® fabrics can be impregnated with the system tested Sikadur® impregnating resins that are all suited for the most common substrate types.

For additional information see corresponding Product Data Sheets.
Structural Strengthening with Sika® CarboDur® Composite Systems

**Reasons for Strengthening**
- Durability problems due to poor or inappropriate construction materials
- Inadequate design or construction
- Aggressive environments not properly understood during the design stages
- Increased loading requirements due to changes of policy or use of structures
- Increased life-span requirements made on ageing infrastructure
- Exceptional or accidental loading

**Materials used**
- **CFRP Plates**
  - Carbon fiber reinforced plates produced by pultrusion processes with precise material properties. Mostly used for flexural strengthening of dynamic and static loaded structures such as bridges, beams, ceilings or walls.
- **Carbon Fibres in CFRP Plates**
  - Magnification 1:2000
  - Fiber volume content > 70%
- **Sika CarboShear L**
  - L-shaped carbon fiber link used as externally bonded shear reinforcement, mostly used for shear reinforcement of T beams as an anchoring tool for CFRP plates.
- **Sika CarboShear**
  - CFRP plates
- **Sika CarboHeater**
  - Heating device for rapid application
- **Sika CarboDur® prestressed CFRP plates**
- **SikaWrap® FRP fabrics**

**Upgrading of existing Civil Engineering Infrastructure**

**Columns/Poles**

**Silos/Chimneys/Towers**

**Bridge Decks**

**Beams/Girders**

**Buildings**

**Parking Structures**

**Sika® Systems**

- **Flexural Strengthening with**
  - Sika® CarboDur® CFRP plates
  - Sika® CarboShear™ L CFRP plates
  - SikaWrap® FRP fabrics
- **Shear Strengthening with**
  - Sika® CarboShear™ L CFRP plates
  - SikaWrap® FRP fabrics
- **Seismic Retrofitting with**
  - SikaWrap® FRP fabrics
Sika® CarboDur®
Structural Strengthening Systems

CFRP Plates System Components

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Sika® CarboHeat®
Heating device

Fast application (2 – 3 hrs) of Sika® CarboDur® plates

Sika® CarboShear® L
L-shaped CFRP plates

Min. tensile load
Elastic modulus
120 kN/40 mm width
120,000 N/mm²

Sikadur®
Epoxy adhesives and mortars

Application temperature
Bond strength
Use
Sikadur®-30
10 – 35 °C
> 4 N/mm²
Plate adhesive
Sikadur®-30 LP
25 – 55 °C
> 4 N/mm²
Plate adhesive
Sikadur®-41
10 – 35 °C
> 4 N/mm²
Repair mortar

FRP Fabrics System Components

SikaWrap®
FRP Fabrics

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Sikadur®
Epoxy impregnating resins

All SikaWrap® fabrics can be impregnated with the system tested Sikadur® impregnating resins that are all suited for the most common substrate types.

For additional information see corresponding Product Data Sheets.

Also available from Sika

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Fax +41 1 436 46 86
www.sika-construction.com

Our most current General Sales Conditions shall apply. Please consult the Product Data Sheet prior to any use and processing.