

## Sikadur®-30

### Adhesive for bonding Carbon Fibre & Steel reinforcement

Construction

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#### Product Description

Sikadur®-30 is a thixotropic, structural two part adhesive, based on a combination of epoxy resins and special filler, designed for use at normal temperatures between +8°C and +35°C.

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#### Uses

Adhesive for bonding structural reinforcement, particularly in structural strengthening works. Including:

- Sika CarboDur® Plates to concrete, brickwork and timber (for details see the Sika CarboDur® Product Data Sheet, the “Technical Information Manual for Sika CarboDur® Externally Bonded Reinforcement” Ref: 850 41 05 and the “Technical Information Manual for Sika CarboDur® Near Surface Mounted Reinforcement” Ref: 850 41 07).
- Steel plates to concrete

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#### Characteristics / Advantages

Sikadur®-30 has the following advantages:

- Easy to mix and apply.
- No primer needed.
- High creep resistance under permanent load.
- Very good adhesion to concrete, masonry, stonework, steel, cast iron, aluminium, timber and Sika CarboDur® Plates.
- Hardening is not affected by high humidity.
- High strength adhesive.
- Thixotropic: non-sag in vertical and overhead applications.
- Hardens without shrinkage.
- Different coloured components (for mixing control).
- High initial and ultimate mechanical resistance.
- High abrasion and shock resistance.
- Impermeable to liquids and water vapour.
- Concrete Society Technical Report No.55 Structural adhesive product specification compliant.
- Very high moisture resistance providing long term durability & performance.

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#### Tests

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##### Approval / Standards

Testing according to EN 1504-4

Concrete Society Technical Report No.55 Structural adhesive product specification compliant ( FIG 12). Oxford Brookes University Test Certificate.

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## Product Data

### Form

|                |                  |            |
|----------------|------------------|------------|
| <b>Colours</b> | Part A:          | white      |
|                | Part B:          | black      |
|                | Parts A+B mixed: | light grey |

|                  |  |             |
|------------------|--|-------------|
| <b>Packaging</b> | 6 kg (A+B): pre-batched unit, pallets of 480 kg (80 x 6 kg). |             |
|                  | Not pre-dosed industrial packaging (pallets at 14 pails):    |             |
|                  | Part A:  | 30 kg pails |
|                  | Part B:  | 10 kg pails |

### Storage

|  |   |
|--|---|
| <b>Storage Conditions / Shelf-Life</b> | 24 months from date of production if stored properly in original unopened, sealed and undamaged packaging in dry conditions at temperatures between +5°C and +30°C. Protect from direct sunlight. |
|--|---|

### Technical Data

|                      |              |
|----------------------|--------------|
| <b>Chemical Base</b> | Epoxy resin. |
|----------------------|--------------|

|                |   |
|----------------|---|
| <b>Density</b> | 1.65 kg/l $\pm$ 0.1 kg/l (parts A+B mixed) (at +23°C) |
|----------------|---|

|                 |   |
|-----------------|---|
| <b>Sag Flow</b> | (According to FIP (Fédération Internationale de la Précontrainte))  |
|                 | On vertical surfaces it is non-sag up to 3-5 mm thickness at +35°C. |

|                      |  |
|----------------------|--|
| <b>Squeezability</b> | (According to FIP (Fédération Internationale de la Précontrainte)) |
|                      | 4'000 mm <sup>2</sup> at +15°C at 15 kg                            |

|                        |  |
|------------------------|--|
| <b>Layer Thickness</b> | 30 mm max.   |
|                        | When using multiple units, one after the other. Do not mix the following unit until the previous one has been used in order to avoid a reduction in handling time. |

|                         |  |
|-------------------------|--|
| <b>Change of Volume</b> | Shrinkage :  |
|                         | 0.04% (According to FIP (Fédération Internationale de la Précontrainte)) |

|                                      |  |
|--------------------------------------|--|
| <b>Thermal Expansion Coefficient</b> | Coefficient W:   |
|                                      | 2.5 x 10 <sup>-5</sup> per °C (temp. range -20°C to +40°C) |

|                          |  |
|--------------------------|--|
| <b>Thermal Stability</b> | Glass transition temperature :                                     |
|                          | (According to FIP (Fédération Internationale de la Précontrainte)) |

| Curing time | Curing Temperature | TG    |
|-------------|--------------------|-------|
| 7 days      | +45°C              | +62°C |

Heat deflection temperature: (According to ASTM-D 648)

| Curing time | Curing Temperature | HDT   |
|-------------|--------------------|-------|
| 3 hours     | +80°C              | +53°C |
| 6 hours     | +60°C              | +53°C |
| 7 days      | +35°C              | +53°C |
| 7 days      | +10°C              | +36°C |

|                            |  |
|----------------------------|--|
| <b>Service Temperature</b> | -40°C to +45°C (when cured at > +23°C) |
|----------------------------|--|

|                            |  |                            |
|----------------------------|--|----------------------------|
| <b>Moisture Resistance</b> | Absorption <0.43%  | Recommendation $\leq$ 0.5% |
|                            | (According to FIP (Fédération Internationale de la Précontrainte)) |                            |

## Mechanical / Physical Properties

### Compressive Strength

(According to EN 196)

| Curing time | Curing temperature        |                           |
|-------------|---------------------------|---------------------------|
|             | +10°C                     | +35°C                     |
| 12 hours    | -                         | 80 - 90 N/mm <sup>2</sup> |
| 1 day       | 50 - 60 N/mm <sup>2</sup> | 85 - 95 N/mm <sup>2</sup> |
| 3 days      | 65 - 75 N/mm <sup>2</sup> | 85 - 95 N/mm <sup>2</sup> |
| 7 days      | 70 - 80 N/mm <sup>2</sup> | 85 - 95 N/mm <sup>2</sup> |

### Shear Strength

Concrete failure (~ 15 N/mm<sup>2</sup>)

(According to FIP 5.15)

| Curing time | Curing temperature        |                           |
|-------------|---------------------------|---------------------------|
|             | +15°C                     | +35°C                     |
| 1 day       | 3 - 5 N/mm <sup>2</sup>   | 15 - 18 N/mm <sup>2</sup> |
| 3 days      | 13 - 16 N/mm <sup>2</sup> | 16 - 19 N/mm <sup>2</sup> |
| 7 days      | 14 - 17 N/mm <sup>2</sup> | 16 - 19 N/mm <sup>2</sup> |

18 N/mm<sup>2</sup> (7 days at +23°C)

(According to DIN 1465)

### Tensile Strength

(According to DIN 527-3)

| Curing time | Curing temperature        |                           |
|-------------|---------------------------|---------------------------|
|             | +15°C                     | +35°C                     |
| 1 day       | 18 - 21 N/mm <sup>2</sup> | 23 - 28 N/mm <sup>2</sup> |
| 3 days      | 21 - 24 N/mm <sup>2</sup> | 25 - 30 N/mm <sup>2</sup> |
| 7 days      | 24 - 27 N/mm <sup>2</sup> | 26 - 31 N/mm <sup>2</sup> |

### Bond Strength

On steel > 21 N/mm<sup>2</sup> (mean values > 30 N/mm<sup>2</sup>) (According to DIN EN ISO 4624) on correctly prepared substrate, ie. blastcleaned to Sa. 2.5

On concrete: (According to FIP (Fédération Internationale de la Précontrainte)) concrete failure (> 4 N/mm<sup>2</sup>)

### E-Modulus

Compressive: 9'600 N/mm<sup>2</sup> (at +23°C) (According to ASTM D695)  
Tensile: 11'200 N/mm<sup>2</sup> (at +23°C) (initial, According to ISO 527)

## System Information

### System Structure

Sika CarboDur® System: For Application Details of Sika CarboDur® Plates with Sikadur®-30, see the "Technical Information Manual for Sika CarboDur® Externally Bonded Reinforcement" Ref: 850 41 05 and the "Technical Information Manual for Sika CarboDur® Near Surface Mounted Reinforcement" Ref: 850 41 07

### Application Details

#### Substrate Quality

See the Product Data Sheet of Sika CarboDur® Plates , Sika CarboDur® BC rods & Near Surface Mounted Reinforcement.


#### Substrate Preparation

See the "Technical Information Manual for Sika CarboDur® Externally Bonded Reinforcement" Ref: 850 41 05 and the "Method Statement for Sika CarboDur® Near Surface Mounted Reinforcement" Ref: 850 41 07

## Application Conditions / Limitations

|                                   |   |
|-----------------------------------|---|
| <b>Substrate Temperature</b>      | +8°C min. / +35°C max.  |
| <b>Ambient Temperature</b>        | +8°C min. / +35°C max.  |
| <b>Material Temperature</b>       | Sikadur®-30 must be applied at temperatures between +8°C and +35°C.                                       |
| <b>Substrate Moisture Content</b> | Max. 4% pbw<br>When applied to mat damp concrete, brush the adhesive well into the substrate.             |
| <b>Dew Point</b>                  | Beware of condensation!<br>Substrate temperature during application must be at least 3°C above dew point. |

## Application Instructions

| <b>Mixing</b>                             | Part A : part B = 3 : 1 by weight or volume<br>When using bulk material the exact mixing ratio must be safeguarded by accurately weighing and dosing each component.  |               |              |       |       |         |               |              |              |           |               |               |              |
|---|---|---------------|--------------|-------|-------|---------|---------------|--------------|--------------|-----------|---------------|---------------|--------------|
| <b>Mixing Time</b>                        |  <p>Pre-batched units:<br/>Mix parts A+B together for at least 3 minutes with a mixing spindle attached to a slow speed electric drill (max. 300 rpm) until the material becomes smooth in consistency and a uniform grey colour. Avoid aeration while mixing. Then, pour the whole mix into a clean container and stir again for approx. 1 more minute at low speed to keep air entrapment at a minimum. Mix only that quantity which can be used within its potlife.</p> <p>Bulk packing, not pre-batched:<br/>First, stir each part thoroughly. Add the parts in the correct proportions into a suitable mixing pail and stir correctly using an electric low speed mixer as above for pre-batched units.</p> |               |              |       |       |         |               |              |              |           |               |               |              |
| <b>Application Method / Tools</b>         | See the "Technical Information Manual for Sika CarboDur® Externally Bonded Reinforcement" Ref: 850 41 05 and the "Technical Information Manual for Sika CarboDur® Near Surface Mounted Reinforcement" Ref: 850 41 07  |               |              |       |       |         |               |              |              |           |               |               |              |
| <b>Cleaning of Tools</b>                  | Clean all tools and application equipment with Sika® Thinner C immediately after use. Hardened / cured material can only be mechanically removed.   |               |              |       |       |         |               |              |              |           |               |               |              |
| <b>Potlife</b>                            | (According to FIP (Fédération Internationale de la Précontrainte))<br><table border="1"><thead><tr><th>Temperature</th><th>+8°C</th><th>+20°C</th><th>+35°C</th></tr></thead><tbody><tr><td>Potlife</td><td>~ 120 minutes</td><td>~ 90 minutes</td><td>~ 20 minutes</td></tr><tr><td>Open time</td><td>~ 150 minutes</td><td>~ 110 minutes</td><td>~ 50 minutes</td></tr></tbody></table> <p>The potlife begins when the resin and hardener are mixed. It is shorter at high temperatures and longer at low temperatures. The greater the quantity mixed, the shorter the potlife. To obtain longer workability at high temperatures, the mixed adhesive may be divided into portions. Another method is to chill parts A+B before mixing them (not below +5°C).</p>                              | Temperature   | +8°C         | +20°C | +35°C | Potlife | ~ 120 minutes | ~ 90 minutes | ~ 20 minutes | Open time | ~ 150 minutes | ~ 110 minutes | ~ 50 minutes |
| Temperature                               | +8°C  | +20°C         | +35°C        |       |       |         |               |              |              |           |               |               |              |
| Potlife                                   | ~ 120 minutes   | ~ 90 minutes  | ~ 20 minutes |       |       |         |               |              |              |           |               |               |              |
| Open time                                 | ~ 150 minutes   | ~ 110 minutes | ~ 50 minutes |       |       |         |               |              |              |           |               |               |              |
| <b>Notes on Application / Limitations</b> | Sikadur® resins are formulated to have low creep under permanent loading. However due to the creep behaviour of all polymer materials under load, the long term structural design load must account for creep. Generally the long term structural design load must be lower than 20-25% of the failure load. Please consult a structural engineer for load calculations for your specific application.  |               |              |       |       |         |               |              |              |           |               |               |              |

**Value Base** 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.

**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.

**Health and Safety Information** For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

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