

# Sikadur-Combiflex® SG system

## High performance joint sealing system

Construction

### Product Description

The Sikadur-Combiflex® SG system is a high performance joint and crack sealing system for construction, expansion (movement) joints and connection joints or cracks. The system allows variable and high levels of movement in one or more directions, whilst maintaining a high quality watertight seal.

The Sikadur-Combiflex® SG system consists of a modified flexible Polyolefin (FPO) waterproofing tape with advanced adhesion and a range of different special Sikadur® epoxy adhesives for use in different types of applications and conditions.

### Uses

*Sealing system for expansion, construction and connection joints, as well as for cracks in:*

- Tunnels and culverts
- Hydro electric power plants
- Sewage treatment plants
- Basements
- Water retaining structures and drinking water reservoirs
- Around iron, steel and concrete pipes
- Swimming pools

*Sealing of:*

- Joints with extreme movement
- Building sections where varying settlement is expected
- Cracks.

### Characteristics / Advantages

- Easy and fast to install
- Suitable for both dry and damp concrete surfaces
- Extremely flexible
- Performs well within a wide range of temperatures
- Excellent adhesion to many materials
- Weather and water resistant
- UV resistant.
- Available with normal and rapid hardening grades of adhesive
- Root resistant
- Good resistance to many chemicals
- Versatile system suitable for many difficult situations



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## Tests

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### Approval / Standards

Hygiene Institut: Test report No. K-178989-09 drinking water suitability according to KTW-Guideline of the Federal Environment Agency (UBA), July 2009

Water Regulations Advisory Scheme (WRAS), for use with water up to 50°C, 10.01.2013

Determination for resistance to roots according to CEN/TS 14416

Sikadur-Combiflex SG system (membrane and epoxy) has an approval for both cold and hot water application. Hot water approval can be a prime requirement due to the very high summer temperatures in some areas.

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## Product Data

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### Form

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#### Appearance/ Colours

*Sikadur-Combiflex® SG-10/-20 P Tape:*  
Flexible light grey membrane

*Sikadur-Combiflex® SG-10/-20 M Tape:*  
Flexible light grey membrane with red masking tape for easier application in expansion joints

*Sikadur-Combiflex® CF Adhesive and Sikadur®-31 CF:*  
Light grey

*Sikadur®-31 DW:*  
Grey

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#### Packaging

*Sikadur-Combiflex® SG system combi-pack*  
*Ready to use kit contains:*  
6 kg Sikadur-Combiflex® CF Adhesive Type Normal  
6 m Sikadur-Combiflex® SG -10 M 150 (thickness 1 mm, width 15 cm)  
1 kg Sika® Colma Cleaner (for tool cleaning)

*Sikadur®-Combiflex® CF Adhesive, Sikadur®-31 CF :*  
5 kg units (A+B) ready to use (just for Sikadur®-31 CF)

*Sikadur®-31 DW*  
*6 kg units (A+B) ready to use*

*Sikadur-Combiflex® SG-10 P:*  
Thickness: 1 mm  
Width: 10, 15, 20, 25, 30, 40, 50, 100, 200 cm  
Rolls of 25 m

*Sikadur-Combiflex® SG-20 P:*  
Thickness: 2 mm  
Width: 15, 20, 25, 30, 40, 50, 100, 200 cm  
Rolls of 25 m

*Sikadur-Combiflex® SG-10 M:*  
Red masking tape  
Thickness: 1 mm  
Width: 10, 15, 20, 25, 30 cm  
Rolls of 25 m

*Sikadur-Combiflex® SG-20 M:*  
Red masking tape  
Thickness: 2 mm  
Width: 15, 20, 25, 30 cm  
Rolls of 25 m

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## Storage

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### Storage Conditions / Shelf Life

*Sikadur®-Combiflex® CF Adhesive and Sikadur®-31 CF:*  
24 months from date of production if stored properly in undamaged unopened original sealed containers in dry conditions at temperatures between +5°C and +30°C.

*Sikadur-Combiflex® SG-10/-20 P tape*  
36 months from date of production if stored properly in undamaged unopened original sealed containers in dry conditions at temperatures between +5°C and +30°C. Opened and unprotected rolls must be used within 2 month.

*Sikadur-Combiflex® SG-10/-20 M tape (with red masking tape)*  
12 months from date of production if stored properly in undamaged unopened original sealed containers in dry conditions at temperatures between +5°C and +30°C. Opened and unprotected rolls must be used within 2 month.

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## Technical Data

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### Chemical Base

*Sikadur®-Combiflex® CF Adhesive and Sikadur®-31 CF:*  
Modified, solvent free, filled 2-part epoxy resin

*Sikadur-Combiflex® SG Tape:*  
modified flexible Polyolefin (FPO) with advanced adhesion

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### Service Temperature

*Sikadur-Combiflex® SG System:*  
-30°C min. to +40°C max. in wet conditions  
-30°C min. to +60°C max. in dry conditions

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## Mechanical / Physical Properties

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### Bond Strength

*Sikadur-Combiflex® SG System (Sikadur-Combiflex® SG Tape glued with Sikadur®-Combiflex® CF Adhesive)*

| Substrate             | Bond Strength                               |
|-----------------------|---|
| Concrete (dry)        | > 2 N/mm <sup>2</sup> (failure in concrete) |
| Concrete (mat / damp) | > 2 N/mm <sup>2</sup> (failure in concrete) |
| Steel (blastcleaned)  | > 5 N/mm <sup>2</sup>                       |

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### Peel Strength

*Sikadur-Combiflex® SG System:*

Sika® System test: Sikadur-Combiflex® SG Tapes bonded to each other with Sikadur®-Combiflex® CF Adhesive, Sikadur®-31 CF or Sikadur®-31 DW.

Results:      Strength:      > 6 N/mm (2 mm)

                 Strength:      > 4 N/mm (1 mm)

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## Resistance

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### Chemical Resistance

*Sikadur-Combiflex® SG System (Sikadur-Combiflex® SG Tape glued with Sikadur®-Combiflex® Adhesive and Sikadur®-31 CF)*

Long-term to:

Water, lime water, cement water, seawater, salt solutions, domestic sewage, bitumen (according to EN 1548) , bitumen emulsion coatings (staining possible) etc.

Temporary to:

Light fuel oil, diesel, diluted alkali and mineral acids, ethanol, methanol, petrol etc.

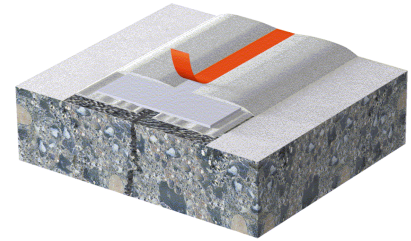
These chemical resistance indications may be used to determine the suitability of the sealing system. Regarding specific short term chemical resistance, please consult our technical service departments.

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## System Information

### System Structure

The Sikadur-Combiflex® SG System consists of the flexible Sikadur-Combiflex® SG sealing tape and a Sikadur® epoxy adhesive.



Two types of flexible tapes are available:

- Sikadur-Combiflex® SG-10/-20 M: with red masking tape, mainly used for expansion joints
- Sikadur-Combiflex® SG-10/-20 P: without masking tape

Various types of suitable Sikadur® adhesives are available:

- Sikadur®-Combiflex® CF Adhesive (Type N and R)
- Sikadur®-31 CF
- Sikadur®-31 DW (mainly used for contact with drinking water)

### Application Details

#### Consumption

*Sikadur-Combiflex® SG Tape:*

Sikadur®-Combiflex® CF Adhesive per metre length

| Tape width | Tape thickness | Adhesive consumption* |
|------------|----------------|-----------------------|
| 10 cm      | 1 mm           | ~ 0.7 kg/m            |
| 15 cm      | 1 mm           | ~ 1.0 kg/m            |
| 20 cm      | 1 mm           | ~ 1.2 kg/m            |
| 15 cm      | 2 mm           | ~ 1.1 kg/m            |
| 20 cm      | 2 mm           | ~ 1.4 kg/m            |
| 25 cm      | 2 mm           | ~ 1.7 kg/m            |
| 30 cm      | 2 mm           | ~ 2.0 kg/m            |

\*The consumption can vary dependent on site conditions (surface roughness, size of aggregate etc.)

#### Substrate Quality

*Concrete, stone, mortar, renderings:*

Substrate must be clean, free from oil, grease, laitance or loose particles. Age of concrete 3-6 weeks depending on environmental conditions.

*Construction Steel 37, V2A-Steel (WN 1.4301):*

Clean, free from oil, grease, rust and scale.

*Polyester, epoxy, ceramics, glass:*

Clean, free from oil and grease.

|                              |  |
|------------------------------|--|
| <b>Substrate Preparation</b> | <p><i>Concrete, stone, mortar, rendering:</i><br/>Blastcleaning or equivalent mechanical means followed by thorough vacuum / dust removal.</p> <p><i>Construction Steel 37:</i><br/>Blastcleaning or equivalent mechanical means followed by thorough vacuum / dust removal. Avoid dew point conditions for application.</p> <p><i>V2A-Steel (WN 1.4301):</i><br/>Light grinding followed by thorough vacuum/dust removal. Avoid dew point conditions for application.</p> <p><i>Polyester, epoxy, ceramics, glass:</i><br/>Light roughening followed by thorough vacuum/dust removal.<br/>Do not apply to siliconised substrates. Avoid dew point conditions for application.</p> |
|------------------------------|--|

**Application Conditions / Limitations**

|                                   |  |
|-----------------------------------|--|
| <b>Substrate Temperature</b>      | <p><i>Sikadur®-Combiflex® CF Adhesive and Sikadur®-31 CF:</i></p> <p>Type Slow: from +25°C to +45°C<br/> Type Rapid: from +5°C to +15°C<br/> Type Normal: from +10°C to +30°C</p> <p><i>Sikadur®-31 DW:</i><br/> From +10°C to +30°C</p> |
| <b>Ambient Temperature</b>        | <p><i>Sikadur®-Combiflex® CF Adhesive and Sikadur®-31 CF:</i></p> <p>Type Slow: from +25°C to +45°C<br/> Type Rapid: from +5°C to +15°C<br/> Type Normal: from +10°C to +30°C</p> <p><i>Sikadur®-31 DW:</i><br/> From +10°C to +30°C</p> |
| <b>Substrate Moisture Content</b> | <p><i>Cementitious substrates:</i><br/> Dry, max. mat damp.<br/> When applied to mat damp concrete, brush the adhesive well into substrate.</p>  |
| <b>Relative Air Humidity</b>      | 85% max. (at +25°C)  |
| <b>Dew Point</b>                  | <p>Avoid condensation.</p> <p>The substrate must be at least 3°C above dew point.</p>  |

## Application Instructions

### Mixing

*Sikadur®-Combiflex® CF Adhesive and Sikadur®-31 CF:*

Part A : B = 2 : 1 parts by weight or volume

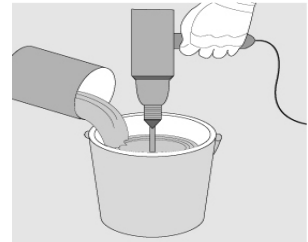
Pre-batched units:

Mix parts A+B together for at least 2 minutes with a mixing spindle attached to a slow speed electric drill (max. 500 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.



Bulk packing, not pre-batched:

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.



## Application Method / Tools

### *Selection of tape size:*

Selection of the correct tape size (thickness and width) and of a suitable Sika® adhesive depends on the expected performance. If necessary, ask for technical advice. Tapes of 1 mm thickness are suitable for sealing of joints subject to light load only.

### *Max. permissible permanent elongation:*

1 mm tape: 10% of the non adhered tape width  
2 mm tape: 25% of the non adhered tape width

Note: For higher movement, place and fix tape in a loop into the joint.

### *Application of tape:*

In case of dirt clean the surface of the Sikadur-Combiflex® SG Tape with a dry or wet cloth. Use water and **no solvent** for cleaning.

Check the Sikadur-Combiflex® SG Tape in respect of damages during storage and transport (e.g. heavy scratches) and remove critical parts if necessary.

### **Note: No activation on site required**

In case of expansion joints or cracks > 1 mm the centre of the tape must not be "bonded" to the substrate. In this case, apply masking tape on top of the joint / crack and on both sides of the joint before applying the adhesive.

Apply a suitable thoroughly mixed Sikadur® adhesive on both sides of the joint / crack onto the prepared substrate, using a suitable trowel. If the concrete substrate is damp, force the adhesive well into the substrate. Layer thickness of adhesive should be 1 - 2 mm and the width on each side at least 40 mm.

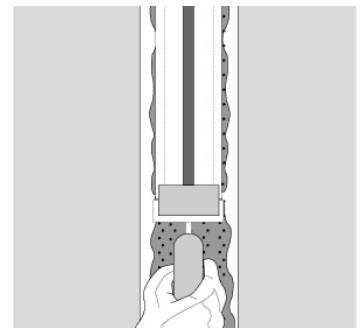
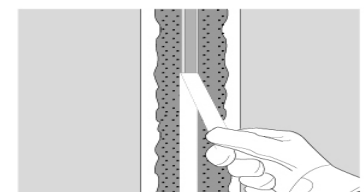
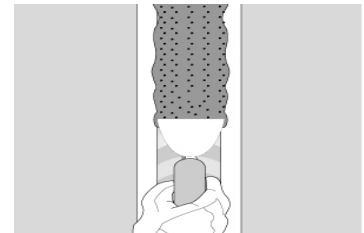
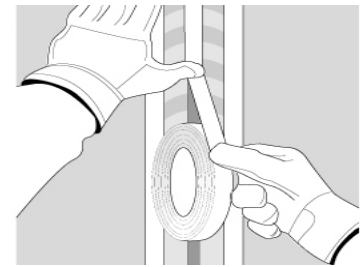
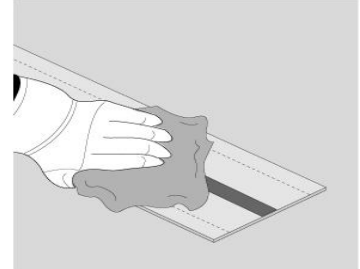
Before placing the Combiflex tape remove the masking tape on top of the expansion joint / crack.

Apply the Combiflex tape within the open time of the adhesive. Press the tape firmly and without trapping air into the adhesive by using a suitable roller. The adhesive should be squeezed out on both sides of the tape by ~ 5 mm.

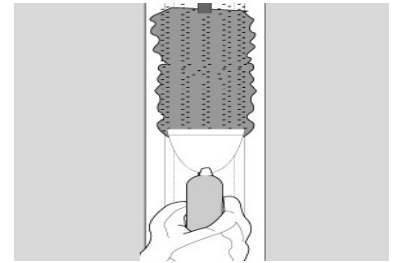
In cases of expansion joints / cracks > 1 mm apply the Sikadur-Combiflex® SG-10/-20 M Tape with the red red masking tape facing upwards.

In cases of high joint movement place the tape as a loop into the joint.

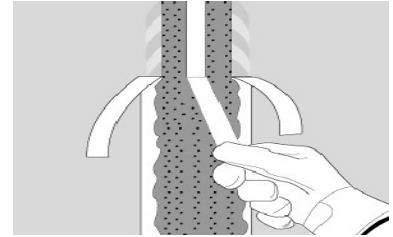
For fixing overhead or in difficult configurations, the tape may be temporarily held in place with Sika® Trocal Adhesive C-705. This adhesive, however may only be used in the tape centre but never on the areas to be bonded with Sikadur-Combiflex® CF Adhesive, Sikadur®-31 CF or Sikadur®-31 DW.



Let the base layer of the Sikadur®-Combiflex® CF Adhesive and Sikadur®-31 CF resp. Sikadur®-31 DW lightly harden before the top layer is applied. Apply the adhesive at a thickness of ~ 1 mm on both sides of the joint / crack, producing a cover which tapers outwards to almost zero.



This is followed by the removal of the red middle strip and the masking tape on both sides to ensure a neat and precise detail.



The adhesive top layer may be smoothed with a brush using a diluted detergent. Allow adhesive to start curing first.

**Note: Do not use detergent if any coating is to be applied.**

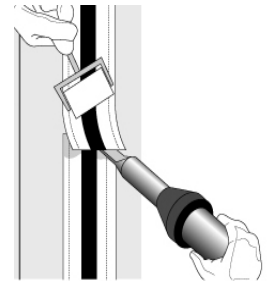
When sealing construction joints or cracks of up to 1 mm width, the tape may be completely covered with Sikadur®-Combiflex® CF Adhesive, Sikadur®-31 CF or Sikadur®-31 DW which also then provides mechanical protection. In these instances the Sikadur-Combiflex® SG Tape must be applied with the red middle strip facing downwards.

*Connection of Sikadur-Combiflex® SG Tape:*

Tape ends are connected by hot air thermal welding. **The welding area must be prepared by roughing the surface by scotch brite or sand paper.**

**Roughen the tapes only in the welding area otherwise the bonding effect can be affected.**

Overlaps have to be 40 - 50 mm.



*Connection of Sikadur-Combiflex® SG Tape with Sika® PVC External Waterbar Type AR (only for construction joints):*

Sikadur-Combiflex® SG Tape must overlap the Waterbar Type AR by at least a tape width.

Clean the Sikadur-Combiflex® SG Tape with a dry cloth.

Clean the waterbar with Sika® Colma-Cleaner and let it dry.

Prime waterbar with Sika® Aktivator and allow to dry (min. 30 minutes, max. 24 hours).

Bond the Combiflex tape and the Sika Waterbar together using Sikaflex®-11-FC adhesive sealant at the thickness of 1 - 3 mm.

Overcoat the contact areas by spatula with Sikaflex®-11-FC.

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#### **Cleaning of Tools**

Clean all tools and application equipment with Sika® Colma-Cleaner immediately after use. Hardened / cured material (adhesive) can only be mechanically removed.

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**Potlife**

| Sikadur-Combiflex® CF Adhesive (6 kg) |               |              |
|---------------------------------------|---------------|--------------|
| Temperature                           | Type Normal   | Type Rapid   |
| +5°C                                  | -             | ~ 60 minutes |
| +10°C                                 | ~ 125 minutes | ~ 45 minutes |
| +15°C                                 | ~ 95 minutes  | ~ 25 minutes |
| +23°C                                 | ~ 50 minutes  | -            |
| +30°C                                 | ~ 25 minutes  | -            |

| Sikadur®-31 CF (5 kg) |               |               |              |
|-----------------------|---------------|---------------|--------------|
|                       | Type Slow     | Type Normal   | Type Rapid   |
| +5°C                  | -             | -             | ~ 60 minutes |
| +10°C                 | -             | ~ 145 minutes | ~ 55 minutes |
| +23°C                 | ~ 135 minutes | ~ 55 minutes  | ~ 40 minutes |
| +30°C                 | -             | ~ 35 minutes  | -            |
| +35°C                 | ~ 70 minutes  | -             | -            |
| +45°C                 | ~ 45 minutes  | -             | -            |

| Temperature | Sikadur-31 DW (0.2 kg) |
|-------------|------------------------|
| +23°C       | ~ 90 minutes           |

If larger quantities are being mixed the temperature of the adhesive will increase due to the chemical reaction, resulting in a reduced potlife.

**Waiting Time / Overcoating**

The Sikadur®-Combiflex® CF Adhesive and Sikadur®-31 CF and Sikadur®-31 DW may be overcoated with an epoxy coating. In this case do not smooth the adhesive with detergent. If the waiting time between application of adhesive and overcoating is to be longer than 2 days, the adhesive must be blinded to excess with quartz sand immediately after application.

**Notes on Application / Limitations**

If joints are to be subjected to water pressure, the tape must be supported in the joint. Hard foam or joint sealant is recommended.  
For exposure to negative water pressure the Sikadur-Combiflex® SG Tape must be secured with a steel plate fixed on one side.  
Limit without support: For 5 mm joints at +20°C and max. 1 bar water head a tape of 2 mm thickness has to be installed.

If a bituminous wearing layer is installed on top of Sikadur-Combiflex® SG System the temperature of the hot mix must not exceed +180°C up to max. 50mm thickness. Up to 10 mm thickness the temperature may be max. +220°C. If necessary apply in layers and allow to cool in between.

The Sikadur-Combiflex® SG Tape must be protected from mechanical damage.

The Sikadur-Combiflex® SG Tape can not be connected to the Sikaplan WT membranes by hot air welding.

**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.

## 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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