

Sikadur® Combiflex® SG system

High performance joint sealing system

Product Description

High performance joint sealing system for construction, expansion and connection joints as well as for cracks. When fixed to the joint, allows irregular and high movement in more than one direction, whilst maintaining a high quality seal.

The Sikadur Combiflex® SG system consists of a modified flexible Polyolefin (FPO) waterproofing tape with advanced adhesion and a various range of suitable Sikadur® adhesives.

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
- Roof joints
- Basements
- Water retaining structures and drinking water reservoirs
- Joints between rigid and flexible surfaces
- Around iron, steel and concrete pipes
- Swimming pools

Sealing of:

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

Repair / reinstatement of leaking joint sealing systems such as:

- Waterbars
- Joint sealants, etc.

Characteristics / Advantages

- **Advanced adhesion, no activation on site required**
- Easy 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
- Available with normal and rapid hardening grades of adhesive
- Root resistant
- Good resistance to many chemicals
- Versatile system suitable for many difficult situations



Tests

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
Determination for resistance to roots according to CEN/TS 14416

Product Data

Form

Appearance / Colours

Sikadur® Combiflex® Tape Flexible light grey membrane
Sikadur®-31 CF Normal Light grey

Packaging

■ *Sikadur® Combiflex® SG tape*

Thickness	Width	Length / roll	Thickness	Width	Length / roll
1 mm	10 cm	25 m	2 mm	10 cm	25 m
1 mm	15 cm	25 m	2 mm	15 cm	25 m
1 mm	20 cm	25 m	2 mm	20 cm	25 m
1 mm	25 cm	25 m	2 mm	25 cm	25 m

■ Sikadur®-31 CF Normal 5 kg prebatched sets

Storage

Storage Conditions / Shelf Life

Sikadur® Combiflex® SG 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®-31 CF Normal

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. Protect from direct sunlight.

Technical Data

Chemical Base

- *Sikadur® Combiflex® SG tape* Modified flexible Polyolefin (FPO) with advanced adhesion
■ *Sikadur®-31 CF Normal* Modified, solvent free, 2-part epoxy resin
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Service Temperature

- Wet conditions -30°C min. to +40°C max.
■ Dry conditions -30°C min. to +60°C max.
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Mechanical / Physical Properties

Bond Strength

Sikadur® Combiflex® SG tapes bonded with Sikadur®-31 CF Normal

Substrate	Bond Strength
Concrete (dry)	> 2 N/mm ² (failure in concrete)
Concrete (mat / damp)	> 2 N/mm ² (failure in concrete)
Steel (blast cleaned)	> 5 N/mm ²

Peel Strength

Sikadur® Combiflex® SG tapes bonded to each other with Sikadur®-31 CF Normal

Results: Strength: > 6 N/mm (2 mm)
 Strength: > 4 N/mm (1 mm)

Resistance

Chemical Resistance

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 Department.

System Information

System Structure

The Sikadur® Combiflex® SG system consists of the Sikadur® Combiflex® SG sealing tape and a Sikadur® epoxy adhesive.

- Sikadur® Combiflex® SG tape
- Sikadur®-31 CF Normal epoxy adhesive



Note: The system configuration as described must be fully complied with and may not be changed.

Application Details

Consumption

Sikadur® Combiflex® SG tape width	Sikadur® Combiflex® SG tape thickness	Sikadur®-31 CF Normal 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
25 cm	1 mm	~ 1.4 kg/m
10 cm	2 mm	~ 0.8 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

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

Substrate Quality	<p><i>Concrete, stone, mortar, renderings</i></p> <p>Substrate must be clean, free from oil, grease, laitance or loose particles. Age of concrete 3 – 6 weeks depending on environmental conditions.</p> <p><i>Steel</i></p> <p>Clean, free from oil, grease, rust and scale.</p> <p><i>Polyester, epoxy, ceramics, glass</i></p> <p>Clean, free from oil and grease.</p>
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Substrate Preparation	<p><i>Concrete, stone, mortar, rendering</i></p> <p>Blastcleaning or equivalent mechanical means followed by thorough vacuum / dust removal.</p> <p><i>Steel</i></p> <p>Blastcleaning or equivalent mechanical means followed by thorough vacuum / dust removal. Avoid dew point conditions for application.</p> <p><i>Polyester, epoxy, ceramics, glass</i></p> <p>Light roughening followed by thorough vacuum / dust removal. Do not apply to siliconised substrates. Avoid dew point conditions for application.</p>
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Application Conditions / Limitations

Substrate and Ambient Temperature	From +10°C to +30°C
Substrate Moisture Content	<p>Dry, max. mat damp (cementitious substrates)</p> <p>When applied to mat damp concrete, brush the adhesive well into substrate.</p>
Relative Air Humidity	85% max. (at +25°C)
Dew Point	<p>Avoid condensation.</p> <p>The substrate must be at least 3°C above dew point.</p>

Application Instruction

Mixing *Sikadur®-31 CF Normal:*
Part A : Part B = 2 : 1 by weight or volume

Slow speed electric drill (max. 600 rpm) with a mixing spindle attached (refer to picture).



Mix parts A+B together for at least 2 minutes 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 pot life.



Application Instructions

Application Method / Tools

Selection of tape size

Selection of the correct tape size (thickness and width) 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

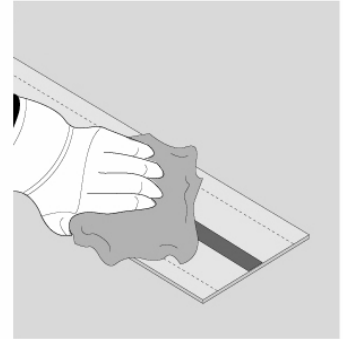
Note: For higher movement, place and fix tape in a loop into the joint.

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.

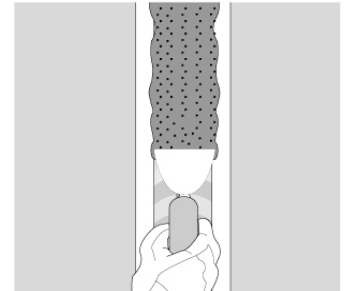
Note: No activation on site required



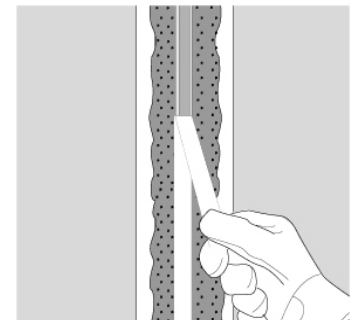
In case of expansion joints or cracks > 1 mm the centre of the tape must not be "bonded" to the substrate. In this case, apply masking tape on top of the joint / crack and on both sides of the joint before applying the adhesive.



Apply thoroughly mixed Sikadur®-31 CF Normal 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.

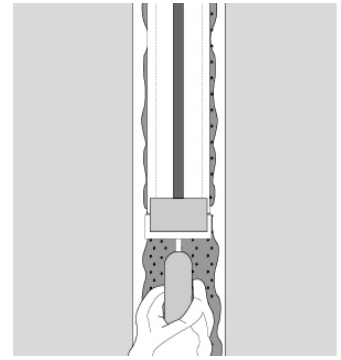


Before placing the Sikadur® Combiflex® tape, remove the masking tape on top of the expansion joint / crack.



Apply the Sikadur® 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.

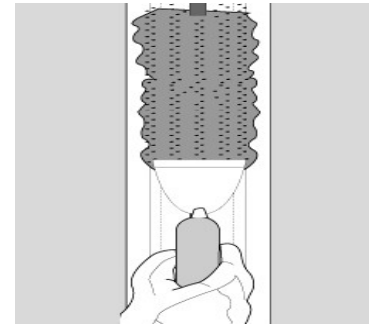
In cases of expansion joints / cracks > 1 mm, do not cover the central portion of the Combiflex® tape with adhesive. Place a masking tape along the central 20 - 25 mm width to ensure the central area is not covered with Sikadur® adhesive.



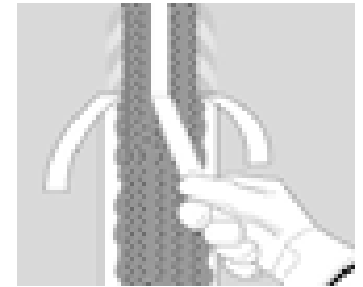
In cases of high joint movement place the tape as a loop into the joint.

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®-31 CF Normal.

Let the base layer of the Sikadur®-31 CF Normal harden before the top layer is applied. If necessary activate the tape again. 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 central masking tape 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®-31 CF Normal which also then provides mechanical protection.

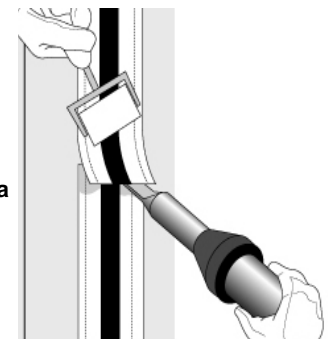
Connection of Sikadur® Combiflex® SG tape:

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.

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.

Pot Life

Sikadur®-31 CF Normal (0.2 kg):

~ 55 minutes at +23°C

~ 35 minutes at +30°C

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

Waiting Time / Overcoatability

Sikadur®-31 CF Normal 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.

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.

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 (available upon request) containing physical, ecological, toxicological and other safety-related data.

Legal Note

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.

Typical Applications

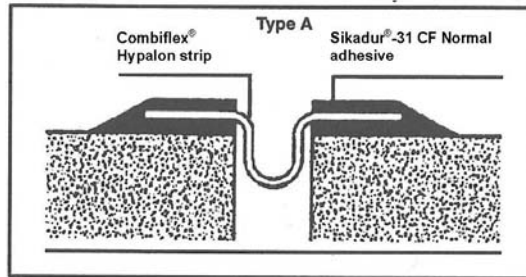


Fig. 1 – For wide joints. Note: Measures should be taken to prevent debris collecting within the Combiflex draped in horizontal joints as it may puncture the Hypalon strip or prevent the joint from closing, eg. Fill with a flexible/compressible PU foam such as open cell PU joint sealant backer rod.

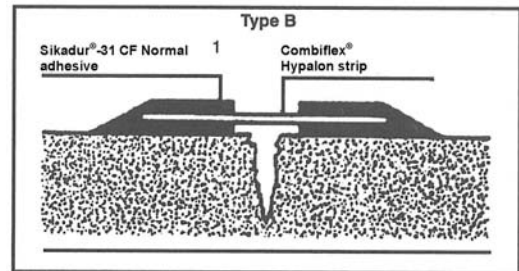


Fig. 2 – For narrow joints and cracks with low movement.

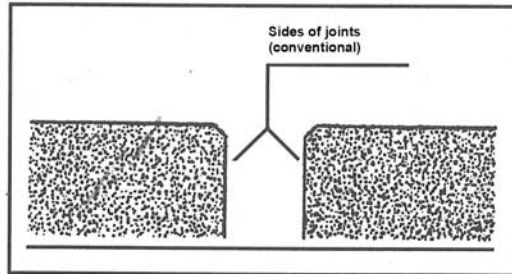


Fig. 3 – With conventional joint seals, the critical place is almost always the sides of the gap because they are difficult to prepare and cannot be thoroughly inspected. This gave rise to the idea of moving the bond area to the outside, ie, to the surface of the structural element.

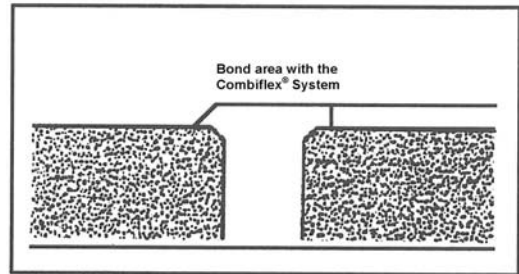


Fig. 4 – Here an ideal bond area can be created and proper inspection is possible.

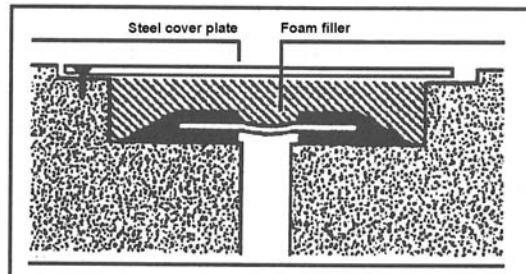


Fig. 5 – Many kinds of cover are available where greater mechanical strength is needed.

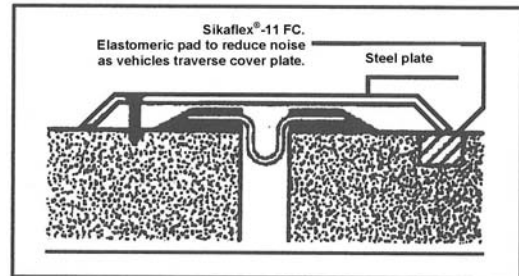


Fig. 6 – Non-recessed joint using another variation of a cover plate for traffic area.

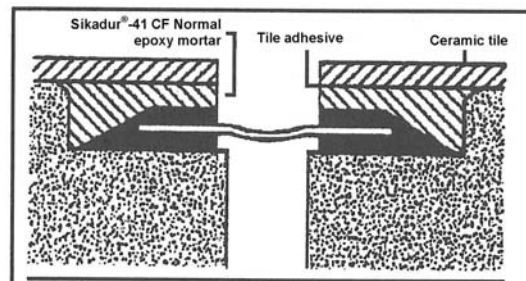


Fig-7 – If the sheet cannot be located at the surface for mechanical, visual, or other reasons, it may be set back in a recess. As above for a swimming pool expansion joint.

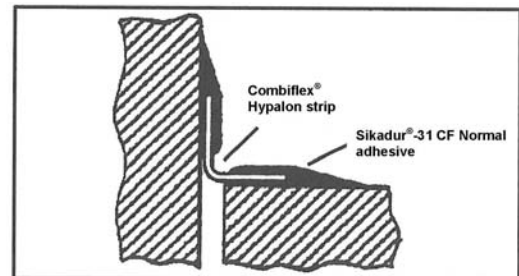


Fig. 8 – Wall to floor or ring beam or inverted configuration for a soffit joint.



Sika Singapore Pte Ltd
200 Pandan Loop, 06-02 Pantech 21
Singapore 128388
SINGAPORE

Sika Kimia Sdn Bhd
Lot 689 Nilai Industrial Estate
71800 Nilai, Negeri Sembilan DK
MALAYSIA

Phone: +65 6777 2811
Fax: +65 6779 6200
e-mail: info@sg.sika.com
www.sika.com.sg

Phone: +606-7991762
Fax: +606-7991980
e-mail: info@my.sika.com
www.sika.com.my



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