

Construction

Sikadur[®]-Combiflex[®] SG System

High performance joint sealing system

Positioning Description

High performance joint sealing system for construction, expansion and connecting joints as well as for cracks. When fixed to the joint, allows variable and high movements in more than one direction, 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 Sikadur[®] 31 CF Normal.

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

Repair / reinstatement of structures with leaking joint sealing systems such as:

- Waterbars
- Joint sealants, etc.

Advantages

Advanced adhesion, no activation of tapes 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
- Root resistant
- Good resistance to many chemicals
- Versatile system suitable for many difficult situations
- UV resistant

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 / Colour

Sika[®]-Combiflex[®] SG-10/20 P Tape: Flexible light grey membrane

Sikadur[®] 31 CF Normal:

Part A: White

Part B: Dark Grey

Part A+B mixed Concrete Grey



Packaging

Sikadur® 31 CF Normal:
 Pre-batched units
 6kg (A+B)
 1.2kg (A+B)
 30kg (A+B)

Sika®-Combiflex® SG-10 P:
 Thickness: 1 mm
 Width: 15, 20, 25, 30, 40 cm
 Rolls of 25 m

Sika®-Combiflex® SG-20 P:
 Thickness: 2 mm
 Width: 15, 20, 25, 30, 40 cm
 Rolls of 25 m

Storage & Shelf Life

Sikadur® 31 CF Normal
 Twenty Four (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.

Sika®-Combiflex® SG-10 / -20 P Tape
 Three (3) years from date of production if stored properly in undamaged unopened original sealed containers in cool, dry conditions. Opened and unprotected rolls must be used within 2 months.

Technical Data**Chemical Base**

Sikadur® 31 CF Normal:
 Modified, solvent free, filled two part epoxy resin

Sika®-Combiflex® SG Tape:
 Modified flexible Polyolefin (FPO) with advanced adhesion

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

Mechanical / Physical**Properties****Bond Strength**

Sikadur®-Combiflex® SG System (Sika®-Combiflex® SG Tape glued with Sikadur® 31 CF Normal)

Substrates	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 System:
 Sika® System test: Sika®-Combiflex® SG Tapes bonded to each other with Sikadur® 31 CF Normal.

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

Chemical Resistance

Sikadur®-Combiflex® SG System (Sika®-Combiflex® SG Tape glued with Sikadur® 31 CF Normal)

Longterm 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 acid, 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 department.



System Information

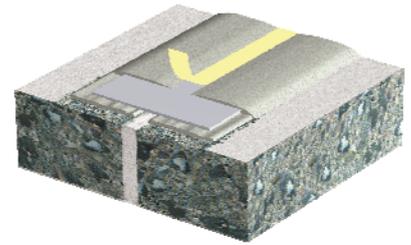
System Structure

The Sikadur®-Combiflex® SG System consists of a modified flexible polyolefin (FPO) waterproofing tape and Sikadur® 31 CF Normal.

Tapes available:

Sika®-Combiflex® SG-10 / 20 P:

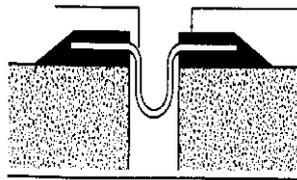
Note: The system configuration as described must be fully complied with and may not be changed.



Examples of Typical Combiflex SG Details:

Combiflex SG tape

Sikadur 31CF Normal adhesive

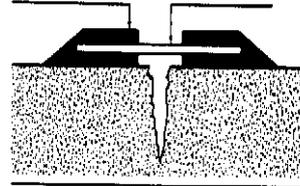


TYPE A.

For wide joints. Note: Measures should be taken to prevent debris collecting within the Combiflex SG draped in horizontal joints as it may puncture the tape or prevent the joint from closing.

Sikadur 31 CF Normal adhesive

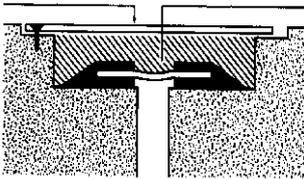
Combiflex SG tape



TYPE B

For narrow joints and cracks with low movement.

Steel cover plate Foam filler



Recessed joint with protective steel cover plate.

Sikaflex 11FC or Sikadur 51 Elastomeric Pad to reduce noise as vehicles traverse cover plate

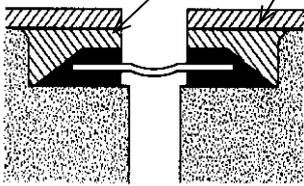
Steel plate



Non recessed joint with protective steel cover plate.

Sikadur 41 CF Normal epoxy mortar

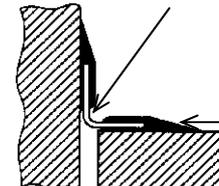
Tile adhesive Ceramic tile



Swimming pool expansion joint.

Combiflex SG tape

Sikadur 31 CF Normal adhesive



Internal corner joint.



Application Details

Consumption

Sika®-Combiflex® SG Tape:

Sikadur® 31 CF Normal adhesive per meter length

Tape Width	Tape Thickness	Adhesive consumption*
10 cm	1 mm	~ 0.7kg/m
15 cm	1 mm	~ 1.0kg/m
20 cm	1 mm	~ 1.2kg/m
10 cm	2 mm	~ 0.8kg/m
15 cm	2 mm	~ 1.1kg/m
20 cm	2 mm	~ 1.4kg/m
25 cm	2 mm	~ 1.7kg/m
30 cm	2 mm	~ 2.0kg/m

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

Substrate Quality

Concrete, stone, mortar, rendering:

Substrates 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.

Substrate Preparation

Concrete, stone, mortar, rendering:

Blastcleaning or equivalent mechanical means followed by thorough vacuum / dust removal. Leave an open textured surface.

Construction Steel 37:

Blastcleaning or equivalent mechanical means followed by vacuum / dust removal. Avoid dew point conditions for application.

Polyester, epoxy, ceramics, glass:

Light roughening followed by thorough vacuum / dust removal.

Do not apply to siliconised substrates. Avoid dew point conditions for application.

Substrate Temperature

Sikadur® 31 CF Normal

From +10°C to +30°C

Ambient Temperature

Sikadur® 31 CF Normal

From +10°C to +30°C

Substrate Moisture Content

Cementitious substrates:

Dry, max, mat damp.

When applied to mat damp concrete, brush the adhesive well into substrate.

Relative Ait Humidity

85% max. (at +25°C)

Dew Point

Avoid condensation.

The substrates must be at least 3°C above dew point.

Applications Instructions

Mixing

Add Component B to Component A at the correct ratio using a Sika mixing paddle attached to a low speed electric drill (300rpm). Mix together until a smooth streak free paste is achieved.



Part batching of Sikadur® 31 CF Normal is not recommended unless strict measurement of the components, in accordance with the mix ratio of the factory proportioned pack, is observed and adhered to.



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 damaged sections if necessary.

Note: No activation on site required

For installation on 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.

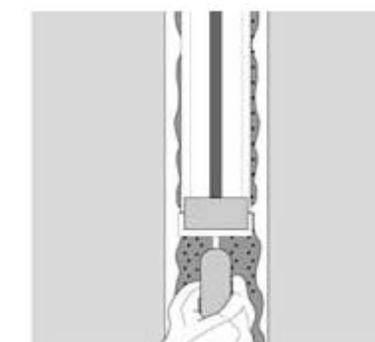
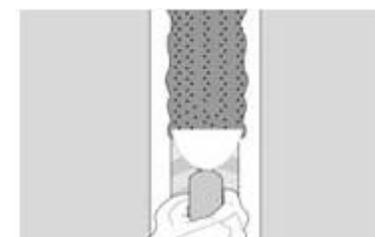
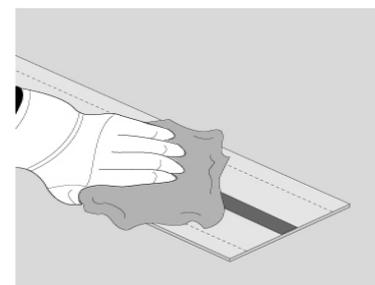
Apply thoroughly mixed Sikadur® 31 CF Normal adhesive on both sides of the joint / crack onto the prepared substrate, using a suitable trowel. If the concrete substrate is damp, force the adhesive well into the substrate. Layer thickness of adhesive should be 1 - 2 mm and the width on each side at least 60 mm.

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

Apply the Combiflex® SG 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.

For expansion joints / cracks > 1 mm apply the Sikadur®-Combiflex® SG-10 / -20 P Tape with applied masking tape facing upwards.

In cases of high joint movement place the

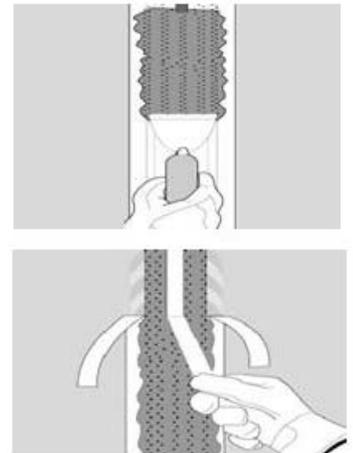


tape as a loop into the joint.

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® 31 CF Normal.

Let the base layer of the Sikadur® 31 CF Normal adhesive 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 applied masking 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.

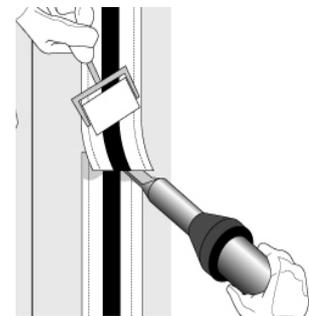
Note: Do not use detergent if any coating is to be applied.

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

Connection of Sika®-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.**

Sikadur®-Combiflex® SG tape must be prepared by **roughening the surface in the welding area** but the tape must **NOT** be **abraded anywhere outside the weld area**. **Sikadur® 31 CF Normal will not stick to abraded Sikadur®-Combiflex SG Tape.**



Overlaps have to be 40 – 50 mm.

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

Sika® -Combiflex® SG Tape must overlap the Waterbar Type Rear Fix by at least a tape width.

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

Clean the waterbar with Sika® Thinner C and let it dry.

Prime waterbar with Sika® Primer 215 and allow to dry.

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

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



Cleaning Tools	Clean all tools and application equipment with Sika® Thinner C immediately after use. Hardened / cured material (adhesive) can only be mechanically removed.						
Pot Life	<p>Potlife (200g) - Sikadur® 31 CF Normal</p> <table border="1"> <thead> <tr> <th>+10°C</th> <th>+23°C</th> <th>+30°C</th> </tr> </thead> <tbody> <tr> <td>~ 145 minutes</td> <td>~ 55 minutes</td> <td>~ 35 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> <p>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.</p>	+10°C	+23°C	+30°C	~ 145 minutes	~ 55 minutes	~ 35 minutes
+10°C	+23°C	+30°C					
~ 145 minutes	~ 55 minutes	~ 35 minutes					
Waiting Time / Overcoating	The Sikadur® 31 CF Normal adhesive 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	<ul style="list-style-type: none"> • For further information please consult the Sikadur®-Combiflex® SG Method Statement. • If joints are to be subjected to water pressure, the tape must be supported in the joint. Hard foam or joint sealant is recommended. • Sikadur®-Combiflex® SG tape must be prepared by <u>roughening the surface in the welding area</u> but the tape must NOT be abraded anywhere outside the weld area. Sikadur® 31 CF Normal <u>will not stick to abraded Sikadur®-Combiflex® SG Tape.</u> • 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. 0.5 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. 50 mm 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 cannot be connected to hypalon based tape(old Sikadur®-Combiflex®) by hot air welding. 						
Notes	All technical data stated in this Product Data Sheet are based on 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.						



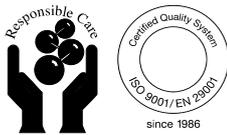
Health & Safety Information

Protective Measures

- To avoid rare allergic reactions, we recommend the use of protective gloves. Change soiled work clothes and wash hands before breaks and after finishing work.
- Local regulations as well as health and safety advice on packaging labels must be observed.
- For further information refer to the Sika Material Safety Data Sheet which is available on www.sika.co.nz, or on request.
- If in doubt always follow the directions given on the pack or label.

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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