Construction

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 flexible Polyolefin (FPO) waterproofing tape with advanced adhesion and a suitable Sikadur® epoxy adhesive.

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 / overbanding of leaking or failed joint sealants

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 GB 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.

Approved for use in accordance with Regulation 31(4)a of the UK Water Supply (Water Quality) Regulations 2000.

Determination for resistance to roots according to CEN/TS 14416

Product Data

Form

Appearance/ Colours	Sikadur®-Combiflex® *SG-10/-20 M Tape*: Flexible light grey membrane with red masking tape *Sikadur® 31 CF Normal:* *Part A White* *Part B Dark Grey* *Parts A+B Concrete Grey* *Sikadur® 31 GB Rapid:* *Part A White* *Part B Dark Grey* *Parts A+B Concrete Grey* *Sikadur® 31 DW:* *Part A White* *Part B Dark Grey* *Parts A+B Concrete Grey*
Packaging	*Sikadur®-31 CF Normal:* 6 kg units (A+B) Pre-batched unit 1.2 KG units (A+B) Pre-batched units *Sikadur®-31 GB Rapid:* 6 kg units (A+B) Pre-batched unit *Sikadur®-31 DW:* 6 kg units (A+B) Pre-batched unit *Sikadur®-Combiflex® SG-10 M:* Red masking tape Thickness: 1 mm Width: 10, 20, cm Rolls of 25 m *Sikadur®-Combiflex® SG-20 M:* Red masking tape Thickness: 2 mm Width: 20, 30 cm Rolls of 25 m *Other size widths are available*

Storage

Storage Conditions / Shelf Life	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℃ and +30℃. Opened and unprotected rolls must be used wi thin 2 month.

Technical Data

Chemical Base	*Sikadur®-31 CF Normal, Sikadur®-31 GB Rapid and Sikadur®-31DW* Modified, solvent free, filled 2-part epoxy resin *Sikadur®-Combiflex® SG Tape* Modified flexible Polyolefin (FPO) with advanced adhesion
Fire Rating (Tape)	Euroclass E (EN ISO 11925-2, classification to EN 13501-1)
Service Temperature	*Sikadur®-Combiflex® SG System:* -30℃ min. to +40℃ max. in wet conditions -30℃ min. to +60℃ max. in dry conditions

Mechanical / Physical Properties

Bond Strength (System)

Sikadur-Combiflex® SG System Sikadur Combiflex SG Tape bonded with Sikadur 31 CF Normal adhesive.

Substrate	Bond Strength
Concrete (dry)	> 2 N/mm^2 (failure in concrete)
Concrete (matt / damp)	> 2 N/mm^2 (failure in concrete)
Steel (blastcleaned)	> 5 N/mm^2

Tape

Tensile Strength	> 12 N/mm^2	(EN 12311-2)
Tear Strength	> 40 N/mm	(ISO 34-B)
Elongation at Break	> 600 %	(EN 12311-2)
Seam strength	> 150 N/5cm	(EN 12316-2)
	> 400 N/5cm	(EN 12317-2)
Peel Strength	Sikadur®-Combiflex® *SG System*: Sika® System test: Sikadur®-Combiflex® SG Tapes bonded to each other with Sikadur®-Combiflex® CF Normal , Sikadur®-31 GB Rapid and Sikadur®-31 DW . Results: Strength: > 6 N/mm (2 mm) Strength: > 4 N/mm (1 mm)	
Behaviour under hydrostatic pressure	*6bar/72h* No leakage	(EN 1928-B)

Resistance

Chemical Resistance

Sikadur®-Combiflex® ® *SG System* Sikadur®-Combiflex® *SG Tape bonded with Sikadur 31 CF Normal,r Sikadur® 31 GB Rapid adhesive or Sikadur®-31 DW.*

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 Department.

System Information

System Structure

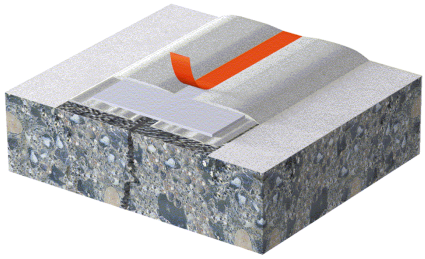
The Sikadur®-Combiflex® SG System consists of a flexible Polyolefin (FPO) waterproofing tape and a Sikadur® epoxy adhesive.

- Sikadur®-Combiflex® SG-10/-20M: With red central masking strip.

Two types of Sikadur® epoxy adhesive are available:

- Sikadur®-31 CF Normal
- Sikadur®-31 GB Rapid
- Sikadur®-31 DW

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



Application Details

Consumption

Sikadur®-Combiflex® SG Tape:

Sikadur® Adhesive per metre length

Strip width	Strip thickness	Adhesive consumption*
10 cm	1 mm	~ 0.7 kg/m
20 cm	1 mm	~ 1.2 kg/m
20 cm	2 mm	~ 1.4 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.

Steel):
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.
Construction Steel 37:
Blastcleaning or equivalent mechanical means to a clean bright metal finish followed by thorough vacuum / dust removal.
Avoid dew point conditions for application.
V2A-Steel (WN 1.4301):
Light grinding to a clean bright metal finish followed by thorough 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.

Application Conditions / Limitations

Substrate Temperature	*Sikadur®-31 C Normal:* +10℃ min /+30℃ max *Sikadur®-31 GB Rapid:* +5℃ min/+20℃ max *Sikadur®-31 DW:* +10℃ min/+30℃ max
Ambient Temperature	*Sikadur®-31 CF:* Type Normal: +10℃ min/+30℃ max *Sikadur®-31 GB Rapid:* +5℃ min/+20℃ max *Sikadur®-31 DW:* +10℃ min/+30℃ max
Substrate Moisture Content	*Cementitious substrates:* Dry, damp tolerant When applied to damp concrete, brush the adhesive well into substrate.
Relative Air Humidity	85% max. (at +25℃)
Dew Point	Avoid condensation.

Application Instructions

Mixing

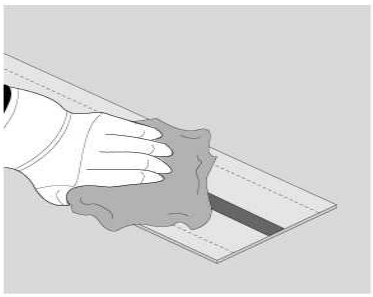
Sikadur® 31 Adhesive (All grades)
Mix parts A+B together for at least 3 minutes with a mixing spindle attached to a slow speed electric drill (max 600 rpm) until the material becomes smooth in consistency and a uniform grey colour. Avoid aeration while mixing. Then, pour the whole mix into a clean container 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 pot life.

Application Method / Tools

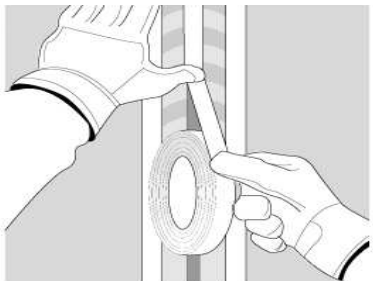
Selection of tape size:
Selection of the correct tape size (thickness and width) and of a suitable Sika® adhesive depends on the expected performance. If necessary, ask for technical advice. Tapes of 1 mm thickness are suitable for sealing of joints subject to light load only.
Max. permissible permanent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

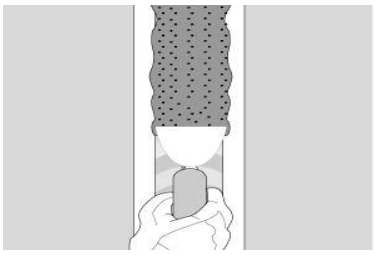
Application of tape:
In case of dirt clean the surface of the Sikadur®-Combiflex® SG Tape with a dry or wet cloth. Use water and **NO SOLVENT** for cleaning.
Check the Sikadur®-Combiflex® SG Tape in respect of damages during storage and transport (e.g. heavy scratches) and remove critical parts if necessary.
NOTE: NO ACTIVATION ON SITE REQUIRED



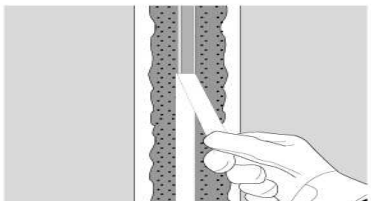
In case of expansion joints or cracks > 1 mm the centre of the Sikadur®-Combiflex® SG tape must not be “bonded” to the substrate. In this case, apply masking tape on top of the joint / crack and on both sides of the joint before applying the adhesive.



Apply thoroughly the mixed Sikadur®-31 adhesive on both sides of the sealant / joint / crack onto the prepared substrate, using a suitable trowel or brush. If the concrete substrate is damp, work the adhesive well into the substrate with a brush. Layer thickness of adhesive should be 1 - 2 mm and the bonding width on each side of the sealant/joint/crack should be at least 50 mm on 20 cm wide tape, 40mm on 10cm wide tape.

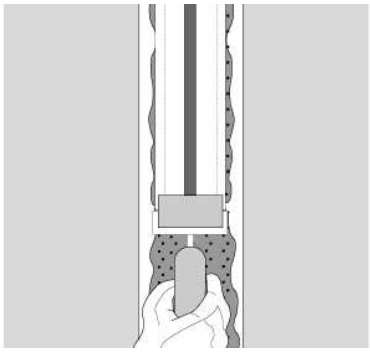


Before placing the Sikadur®-Combiflex® SG tape remove the masking strip on top of the sealant / joint / crack.

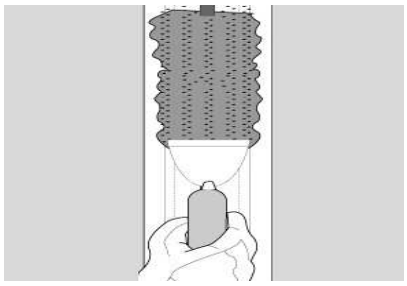


Apply the Sikadur®-Combiflex® SG 10/20M tape with the red tape facing upwards within the open time of the adhesive. Press the tape firmly and without trapping air into the adhesive by using a suitable roller. The adhesive should be squeezed out on both sides of the tape by ~ 5 mm.

Apply the Sikadur®-Combiflex® SG Tape with the red middle strip facing upwards.



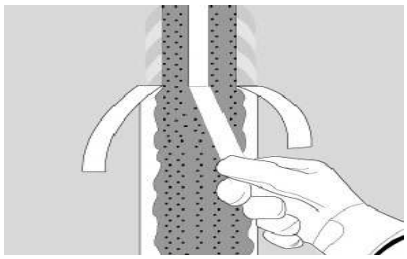
Let the base layer of the Sikadur®-31 Adhesive achieve initial set before the top layer is applied. Apply the adhesive at a thickness of ~ 1 mm over the full width of the Sikadur Combiflex SG tape and extended a minimum of 10mm beyond edges of the Sikadur Combiflex SG tape.



This is followed by the immediate 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.

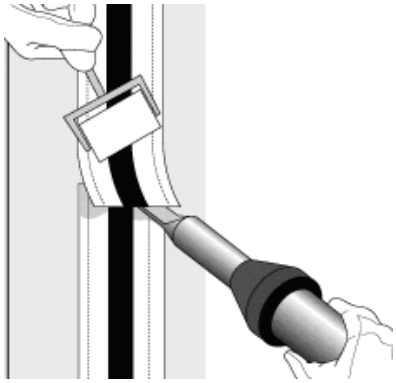
Note: Do not use detergent if any coating is to be applied.



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.



Forming internal/external 90° corners.

All internal/external corners should be formed by folding the Sikadur-Combiflex® SG Tape on site by careful use of a hot air welding gun.

Sikadur® Combiflex® SG detailing is available on request including pipe penetrations.

Cleaning of Tools

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

Refer to appropriate Sikadur® 31 product data sheet.

Waiting time / Overcoating

The Sikadur® -31CF Normal, Sikadur®-31 GB Rapid 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 the application of the adhesive and the overcoating is to be longer than 2 days, the adhesive must be blinded to excess with quartz sand immediately after application

If the Sikadur® -31 grades are to be overcoated with Sika® 1 Pre-bagged mortar waterproofing system or other cementitious materials the top layer of adhesive must be blinded to excess with kiln dried quartz sand immediately after application

Pot Life

Temperature	Sikadur®-31 CF Normal 1.2 kg	Sikadur®-31 GB Rapid 1.2 kg	Sikadur®-31 DW 200 gm
+5ºC		~ 60 minutes	
+10ºC	~ 145 minutes	~ 55 minutes	
+23ºC	~ 55 minutes	~ 40 minutes	~ 90 minutes
+30ºC	~ 35 minutes		

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

Construction

Notes on Application / Limitations	If joints are to be subjected to positive water pressure, the tape must be supported in the joint. Hard foam, fillerboard or joint sealant is recommended. For exposure to negative water pressure the Sikadur®-Combiflex® SG Tape must be supported with steel plates secured on one side. *Limit without support: For 5 mm joints at +20℃ and max. 1.0 bar water head a tape of 2 mm thickness has to be used.* If a bituminous wearing layer is installed on top of Sikadur®-Combiflex® SG System the temperature of the hot mix must not exceed +180℃. Up to 10 mm thickness the temperature may be max. +220℃. If necessary ap ply 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.
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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