

Sikadur-Combiflex® SG system

High performance joint sealing system

Product Description

The Sikadur-Combiflex® SG system is a high performance joint and crack sealing system for construction joints, 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 properties and a range of different special Sikadur® epoxy adhesives for use in different types of applications and conditions.

Uses

Sealing all types of joints and cracks in many different structures and applications including:

- 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 of the tapes is required**
- Use for both cold and hot water applications
- Fast and easy to install
- Suitable for dry and damp concrete surfaces
- Extremely flexible
- Performs well within a wide range of temperatures
- Excellent adhesion to many different substrate materials
- Weathering and water resistant
- UV-resistant
- Available with normal and rapid hardening grades of the adhesive
- Root penetration resistant
- Good resistance to many different chemicals
- Versatile system suitable for many difficult situations

Construction



Tests

Approval / Standards

Hygiene Institute: 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
Performance test at STUVA, 07.11.2011
Water Regulations Advisory Scheme (WRAS), for use with water up to 50°C, 10.01.2013
Building Research Institute for general use, Polish, 19.12.2012
Road and Bridge Research Institute for all transportation and communication structures, Polish, 10.09.2012
Requirements of AS/NZS 4020:2005, compliance to cover cold water application, 29.02.2012

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.

Product Data

Form

Appearance/ Colours

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

Part A White

Part B Grey

Parts A+B Light grey

Sikadur® 31 CF Normal, Rapid and DW

Part A White

Part B Dark Grey

Parts A+B Concrete Grey

Packaging

Sikadur®-Combiflex® CF Adhesive
6 kg units (A+B) Pre-batched unit

Sikadur®-31 CF Normal

6 kg units (A+B) Pre-batched unit

1.2 KG units (A+B) Pre-batched units

Sikadur®-31 CF 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 cm

Rolls of 25 m

Storage

Storage Conditions / Shelf Life

Sikadur®-Combiflex® CF Adhesive, Sikadur®-31 CF and Sikadur®-31 DW:
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 M tape (with red masking tape)
12 months from date of production if stored properly in undamaged unopened original sealed packaging under cool and dry conditions. Opened and unprotected rolls must be used within 2 month.

Technical Data

Chemical Base

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

Sikadur-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

Fire Rating (Tape)

Euroclass E (EN ISO 11925-2, classification to EN 13501-1)

Mechanical / Physical Properties

Bond Strength

Sikadur-Combiflex® SG System (Sikadur-Combiflex® SG Tape glued with Sikadur®-Combiflex® CF Adhesive or Sikadur 31 CF Normal adhesive)

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

Tape

Tensile Strength > 12 N/mm² (EN 12311-2)

Tensile 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 Adhesive, Sikadur®-31 CF or 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®-Combiflex® Adhesive, Sikadur®-31 CF 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 service departments.

System Information

System Structure

The Sikadur-Combiflex® SG system consists of a modified flexible Polyolefin (FPO) waterproofing tape and a Sikadur® epoxy adhesives.

Two types of flexible tapes are available:

- Sikadur-Combiflex® SG-10/-20 M: with red masking tape

Various types of suitable Sikadur® adhesives are available:

- Sikadur®-Combiflex® CF Normal
- Sikadur®-31 CF Normal and Rapid
- Sikadur®-31 DW Normal and Rapid (mainly used for contact with drinking water)



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

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
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.

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:

These substrates must be mechanically prepared e.g. by blastcleaning, to be free from any cement laitance, damaged concrete, old surface treatments or coatings and then all loose or friable particles must be removed to achieve a contaminant free, open textured surface

Construction Steel 37:

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

V2A-Steel (WN 1.4301):

Light grinding followed by thorough vacuum/dust removal. Avoid dew point conditions during application..

Polyester, epoxy, ceramics, glass:

Light abrasive roughening followed by thorough vacuum/dust removal.

Do not apply to siliconised or silicone oil treated substrates (debonding agent).

Avoid dew point conditions during application

Application Conditions / Limitations

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

Application Instructions

Mixing	<i>Sikadur[®]-Combiflex[®] CF Adhesive and Sikadur[®]-31 (all grades):</i> 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.
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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 clean dry or damp cloth. Use water and **no solvent** for this cleaning.

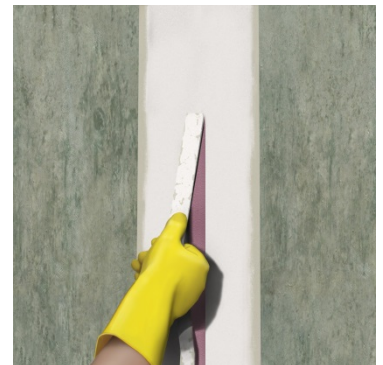
Check the integrity of the Sikadur-Combiflex® SG Tape to ensure that there is no damage from storage or transport (e.g. heavy scratches). Remove any damaged sections if necessary.

Note: No activation is required on site

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

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

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



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.

In situations with high joint movement, place the tape into the joint as a loop.



Let the base layer of the Sikadur®-Combiflex® 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® Colma-Cleaner immediately after use. Hardened / cured material (adhesive) can only be mechanically removed. Refer to appropriate Sikadur Combiflex Adhesive and Sikadur® 31 product data sheets.

Waiting time / Overcoating

The Sikadur® Combiflex Adhesive, Sikadur® -31CF Normal, Sikadur®-31 CF 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® Combiflex Adhesive or 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

Potlife	Temperature	Sikadur-Combiflex® CF Adhesive (6 kg)	Sikadur®-31 CF Normal 1.2kg	Sikadur®-31 GB Rapid 1.2kg	Sikadur®-31 DW 200 gm
	+5°C	-	-	~ 60 minutes	-
	+10°C	~ 125 minutes	~ 145 minutes	~ 55 minutes	-
	+23°C	~ 50 minutes	~ 55 minutes	~ 40 minutes	~ 90 minutes
	+30°C	~ 25 minutes	~ 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.

Notes on Application / Limitations

For further application 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.

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 20 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. 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 and Hypalon based (e.g. old Sikadur-Combiflex) 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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