

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

Characteristics / Advantages

- **Advanced adhesion between the tapes and the adhesives, no activation of the tapes is required on site**
- 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 Assessment for resistance to root penetration according to CEN/TS 14416 AS/NZS 4020:2005 Certified for use in contact with potable water.
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Product Data

Form

Appearance/ Colours	<i>Sikadur-Combiflex® SG-20 Tape:</i> Flexible light grey membrane <i>Sikadur®-31</i> Light grey
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Packaging	<i>Sikadur®-31 :</i> 6 kg units (A+B) ready to use 20 kg unit part A 10 kg unit part B <i>Sikadur-Combiflex® SG-20 :</i> Thickness: 2 mm Width: 15, 20, 25, 30, 40, 50, 100, 200 cm Rolls of 25 m Other widths available upon request subject to minimum order requirement.
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Storage

Storage Conditions / Shelf Life	<i>Sikadur®-31:</i> 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. <i>Sikadur-Combiflex® SG-20 tape</i> 36 months from date of production, under cool and dry conditions.
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Technical Data

Chemical Base	<i>Sikadur®-31:</i> Modified, solvent free, filled 2-part epoxy resin <i>Sikadur-Combiflex® SG Tape:</i> modified flexible Polyolefin (FPO) with advanced adhesion
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Service Temperature	<i>Sikadur-Combiflex® SG System:</i> -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

Bond Strength	<i>Sikadur-Combiflex® SG System (Sikadur-Combiflex® SG Tape glued with Sikadur®-31 Adhesive)</i>								
	<table border="1"><thead><tr><th>Substrate</th><th>Bond Strength</th></tr></thead><tbody><tr><td>Concrete (dry)</td><td>> 2 N/mm² (failure in concrete)</td></tr><tr><td>Concrete (mat / damp)</td><td>> 2 N/mm² (failure in concrete)</td></tr><tr><td>Steel (blast cleaned)</td><td>> 5 N/mm²</td></tr></tbody></table>	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
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Peel Strength	<i>Sikadur-Combiflex® SG System:</i> Sika® System test: Sikadur-Combiflex® SG Tapes bonded to each other with Sikadur®-31. Results: Strength: > 6 N/mm (2 mm)
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Strength: > 4 N/mm (1 mm)

Resistance

Chemical Resistance

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

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.

One type of flexible tape is available:

- Sikadur-Combiflex® SG-20 P: (without masking tape)

One type of adhesive is available:

- Sikadur®-31 (Type N, R and LP)

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



Application Details

Consumption

Sikadur-Combiflex® SG Tape:

Sikadur®-31 per metre length 1.5-2.0kg/m for tape [both sides].

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, and glass:

Clean, free from oil and grease.

Substrate Preparation

Concrete, stone, mortar, rendering:

These substrates must be mechanically prepared e.g. by blast cleaning, 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:

Blast cleaning 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®-31:</i> Type Long Pot Life: from +25°C to +45°C Type Rapid: from +5°C to +15°C Type Normal: from +10°C to +30°C
Ambient Temperature	<i>Sikadur®-31:</i> Type Long Pot Life: from +25°C to +45°C Type Rapid: from +5°C to +15°C Type Normal: from +10°C to +30°C
Substrate Moisture Content	<i>Cementitious substrates:</i> Dry, max. mat damp. When applied to mat 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 3C above the dew point.

Application Instructions

Mixing

Sikadur®-31:

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

Pre-batched units:

Mix parts A+B together in the part A bin for at least 2 minutes with a resin mortar mixing paddle 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 pot life.



Bulk packing, not pre-batched:

First, stir each part thoroughly. Add the parts in the correct proportions into a suitable mixing container and stir correctly using an electric low speed mixer as outlined above for pre-batched units.



Application Method / Tools

Selection of tape size:

Selection of the correct tape size (width) and of a suitable Sika® adhesive depends on the expected performance. If necessary, ask for technical advice.

Max. permissible permanent elongation:

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.

NOTE: Application of solvent will render the combiflex tape unusable.

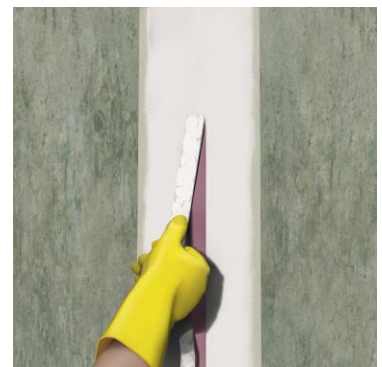
Check the integrity of the Sikadur-Combiflex® SG Tape to ensure that there is no damage from storage or transport (e.g. heavy scratches). Remove any damaged sections if necessary.

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 the mixed Sikadur® adhesive on both sides of the joint / crack onto the prepared substrate, using a suitable brush, trowel or spatula. 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 40 mm.

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



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

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



Let the first layer of the Sikadur[®]-31 begin to harden before the top layer is applied. Apply the top layer of adhesive at a thickness of ~ 1 mm on both sides of the joint / crack, producing a fully covering layer which tapers outwards to almost zero.



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 which also then provides mechanical protection. In these instances the Sikadur-Combiflex[®] SG Tape must be applied.

Connection of Sikadur-Combiflex® SG Tape:

Tape ends are connected by hot air thermal welding **The welding area must be prepared by roughening the surface with stainless steel wire brush or sand paper.**

Roughen the tape only in the area to be welded as adhesive bond will be compromised of abrasion occurs outside of welded area.

Overlaps have to be 40 - 50 mm.

Welding parameters, such as speed and temperature shall be established with trials on site, prior to any welding works.

Basic settings: 280 - 360°C

Hand welding in the overlap area is carried out in three steps.

1. Spot weld the overlap
2. Pre-weld: weld the rear overlap area so that a 20 mm flap (using a 20 mm nozzle) remains for the final welding
3. Final weld; weld the remaining flap. Guide the roller at a distance of 20 mm parallel to the air outlet of the welding nozzle. Roll the pressure roller fully across the seam.

Note: Solvents such as Sika Colma Cleaner do not improve the welding properties



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.

Attention: Ensure that Colma Cleaner doesn't contact Combiflex SG tape as tape will be rendered unusable.

Prime waterbar with Sika® Primer-215 (Please consult the Product Data Sheet of Sika® Primer-215)

Bond the Combiflex SG 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.

Potlife

	Sikadur [®] -31 (0.2 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	-	-

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 /
Overcoating**

The Sikadur[®]-31 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**

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.

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.

Important Notes

- 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 Material Safety Data Sheet which is available on request.
- If in doubt always follow the directions given on the pack or label.
- Residues of material must be removed according to local regulations. Fully cured material can be disposed of as household waste under agreement with the responsible local authorities.
- Detailed health and safety information as well as detailed precautionary measures e.g. physical, toxicological and ecological data can be obtained from the Material Safety Data Sheet.

Important Notification

The information, and, in particular, the recommendations relating to the application and end-use of Sika's 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 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 proprietary rights of third parties must be observed. All orders are accepted subject of our terms and conditions of sale. Users should always refer to the most recent issue of the Australian version of the Technical Data Sheet for the product concerned, copies of which will be supplied on request.

PLEASE CONSULT OUR TECHNICAL DEPARTMENT FOR FURTHER INFORMATION.

