

Sikadur®-Combiflex®

High Performance Joint Sealing System

Description	A high performance joint sealing system for irregular or high movement joints, based on Hypalon flexible sheeting and epoxy resin based Sikadur-Combiflex Adhesive. When fixed to the joint, allows considerable movement in more than one direction, whilst maintaining a high quality seal.
Uses	<p>Sealing system for expansion joints, construction and connection joints, as well as cracks in:</p> <ul style="list-style-type: none">- Tunnels and culverts- Hydro electric power plants, sewage treatment plants- Roof joints- Basements- Water retaining structures- Joints between rigid and flexible surfaces- Around iron, steel and cement pipes- Swimming pools <p>Sealing of:</p> <ul style="list-style-type: none">- Joints with extreme movement- Building sections where varying settlement is expected <p>Repair / Reinstatement of leaking joint sealing systems such as:</p> <ul style="list-style-type: none">- Waterbars- Joint sealants etc.
Advantages	<ul style="list-style-type: none">- Suitable for both dry and damp concrete surfaces- Extremely flexible- Performs well within a wide range of temperatures- Excellent adhesion to many materials- Completely weather and water resistant- Fast curing- Easy to install- Available with adhesive of normal, long pot life, or rapid hardening grade- Root resistant- Good resistance to many chemicals- Versatile system suitable for various difficult situations
Test Certificates	<ul style="list-style-type: none">- Drinking water approval of the Health Laboratory of the Canton of Zurich, Report nr. 1809-5 and 1810-2 (1992)- Testreport nr. 224.01.99 for water contaminating liquids (KVS, 1999)



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 within their shelflife. 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 to our current terms of sale and delivery. Users should always refer to the most recent issue of the Technical Data Sheet for the product concerned, copies of which will be supplied on request or can be accessed in the Internet under „www.sika.ch/bauchemie“.

Technical Data

Storage	Store in dry and cool conditions.																												
Shelf life	24 months from date of production if stored in dry conditions in unopened original packing at temperatures between +5°C and +30°C (ready for use set and Combiflex tape), 36 months for Sikadur Combiflex-Tape.																												
Packaging	<p><u>Ready for use set</u></p> <ul style="list-style-type: none"> · 6 kg Combiflex adhesive, type normal · 6 m tape: thickness 1 mm, width 15 cm · 1 kg Colma-Cleaner <p><u>Colma-Cleaner</u> (Tape-Activator)</p> <ul style="list-style-type: none"> 1 kg tin 5 kg pail 20 kg minidrum 160 kg drum <p><u>Hypalon Solvant</u> 4.5 kg pail</p> <p><u>Combiflex-Adhesive</u></p> <ul style="list-style-type: none"> · 6 kg units (A+B) ready for use · A-component 30 kg pails, B-component 10 kg pail (normal, rapid, long potlife) 	<p><u>Industrial packing</u></p> <p><u>Combiflex-Tape:</u></p> <table border="1"> <thead> <tr> <th>thickness</th> <th>width</th> <th>length</th> </tr> </thead> <tbody> <tr> <td>1 mm</td> <td>10 cm</td> <td>50 m (2 x 25 m)</td> </tr> <tr> <td>1 mm</td> <td>15 cm</td> <td>25 m</td> </tr> <tr> <td>1 mm</td> <td>20 cm</td> <td>25 m</td> </tr> <tr> <td></td> <td>2 mm</td> <td>10 cm 20 m</td> </tr> <tr> <td>2 mm</td> <td>15 cm</td> <td>20 m</td> </tr> <tr> <td>2 mm</td> <td>20 cm</td> <td>20 m</td> </tr> <tr> <td>2 mm</td> <td>25 cm</td> <td>20 m</td> </tr> <tr> <td>2 mm</td> <td>30 cm</td> <td>20 m</td> </tr> </tbody> </table>	thickness	width	length	1 mm	10 cm	50 m (2 x 25 m)	1 mm	15 cm	25 m	1 mm	20 cm	25 m		2 mm	10 cm 20 m	2 mm	15 cm	20 m	2 mm	20 cm	20 m	2 mm	25 cm	20 m	2 mm	30 cm	20 m
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Sikadur-Combiflex-Strip

Type	Hypalon-Elastomer
Colour	Light grey
Tensile strength (DIN 53 455, bar 4)	> 6 N/mm ²
Elongation at break (DIN 53 455 bar 4)	> 400 %
Tear propagation strength (DIN 33 515)	> 300 N/cm
Service temperature	-30°C to +60°C (dry)/+40°C (wet)
Bending test (SIA 280)	No cracks at -30°C.
Thermal ageing (SIA 280)	passed
Artificial weathering (SIA 280)	10'000 h passed
Fire classification (SIA 280)	IV.3
Root resistance (SIA 280)	passed

Sikadur-Combiflex-Adhesive

Type		<i>Normal</i>	<i>Rapid</i>
Colour		Light grey	Light grey
Density		1.7 kg/l	1.7 kg/l
Mix ratio	Comp. A : B = 3 : 1 parts by volume or weight.		
Pot life (min.)	5°C	-	50
	10°C	90	40
	15°C	75	25
	20°C	60	-
	30°C	30	-
Open time (min.)		60 (20°C)	60 (10°C)
Scratch resistance (hrs.)	5°C	-	15
	15°C	8	5
	30°C	3	-
Compressive strength (N/mm²)		10°C 30°C	5°C 15°C
	3 days	47 73	41 48
	7 days	50 76	47 58
	14 days	63 79	49 59
Bond strength (N/mm²)	· Concrete (dry)	> 2 (concrete failure)	> 2 (concrete failure)
	· Concrete (mat moist)	> 2 (concrete failure)	> 2 (concrete failure)
	· Steel (sandblasted)	> 10	> 10
Coefficient of linear expansion °C⁻¹	5 × 10 ⁻⁵ (± 0.5 × 10 ⁻⁵)	at - 20°C to +20°C	
	10 × 10 ⁻⁵ (± 0.5 × 10 ⁻⁵)	at +20°C to +60°C	
Modulus of elasticity static (MPa)	- 20°C	6'100	5'900
	+23°C	3'500	2'200

Sikadur-Combiflex-System

Tear off strength	Sika System Test, Sikadur-Combiflex Adhesive applied to mortar prisms followed by extension of the sealing system. Result : Tape rupture Elongation > 400 % Strength > 4 N/mm ²
Peel strength	Sika System Test, Sikadur-Combiflex Tapes glued to each other. Result : Tape rupture Elongation > 400 % Strength > 3 N/mm ²
Chemical resistance (system)	Longterm to : Water, lime water, cement water, seawater, salt solutions, domestic sewage, bitumen, emulsion type bituminous coatings. Temporary to : Light fuel oil, diesel, diluted alkali lyes and mineral acids, ethanol, methanol, petrol. These chemical resistance indications may be used to determine the suitability of the sealing system. Regarding specific project oriented short term chemical resistance, please consult our technical service.

Application

Temperature / moisture	Rapid type from +5°C to +15°C Normal type from +10°C to +30°C On damp substrates adhesive must be brushed well into surface.
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Substrate preparation	<p><i>Concrete, stone, mortar, renderings</i> Clean, free from oil, grease, laitance or loose particles. Age of concrete depending on climatic conditions, 3 - 6 weeks. Preparation : Sand-, waterblasting, grinding, cutting, or shotblasting, followed by thorough dusting.</p> <p><i>Steel (WN 1.4301)</i> Free from oil or grease, rust and scale. Preparation : Sandblasting, grinding. Observe dewpoint. If cleaned steel is not immediately glued, surface must be protected from rusting with the application of Sikagard-62.</p> <p><i>Polyester, epoxy, ceramics, glass</i> Free from oil and grease. Polyester and epoxy must be roughened by grinding, use coarse grinding paper. Glass and ceramics : light roughening. Do not apply to siliconised substrates.</p>
Mixing	<p><i>Ready for use packs</i> Add all of Comp. B to Comp. A. Mix thoroughly with a low speed drill (max. 500 rpm) to avoid entraining air until a uniform consistency is achieved.</p> <p><i>Industrial packings</i> Stir well single components supplied in pails. Dose each component in correct proportion and mix in a suitable container according to above instructions.</p> <p>If large quantities are being mixed temperature of Sikadur Combiflex Adhesive will increase due to chemical reaction, resulting in a reduced potlife.</p>
Tape size	<p>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 For higher movement, place and fix tape in a loop.</p>
Application of tape	<ul style="list-style-type: none"> · Remove transparent separation foil Activate Sikadur-Combiflex Tape on both sides with Sika Colma-Cleaner, using rag saturated in Sika Colma-Cleaner. Wipe thoroughly. Leave to dry for at least 0.5 hr., max. 8 hrs. · Apply properly mixed Sikadur Combiflex Adhesive on both sides of joint or crack onto the prepared substrate, using trowel or tooth comb. If damp, rub well into substrate. Layer thickness 1 - 2 mm, width (on each side) at least 40 mm. · In case of expansion joints or cracks > 1 mm the centre of the tape may under no circumstances be „glued“ to the substrate. To avoid, apply masking tape on top of the joint / crack and on both sides of the joint before applying the adhesive. Before placing the tape (red middle strip facing upwards) remove masking tape. By pressing the tape firmly into the Combiflex Adhesive (free from air pockets), the adhesive will be squeezed out on both sides by approx. 5 mm. · Apply Sikadur-Combiflex tape within open time of the adhesive. · In case of excessive joint movement it is advisable to place the Combiflex strip as a loop into the joint. · As a fixing aid overhead or in difficult configurations, the Combiflex Tape may be temporarily held in place with Sika Contact Adhesive C705. This adhesive, however may only be used in the tape centre but never on the areas to be adhered with Combiflex Adhesive. · It is recommended to let the base layer of the Combiflex adhesive harden before the top layer is applied. If necessary activate Combiflex tape again before applying Combiflex adhesive on both sides at a thickness of approx. 1 mm, producing a cover which tapers to almost zero. This is followed by the removal of the red middle strip. · The adhesive cover layer may be smoothed with a brush which has been wetted with a diluted detergent. However, allow adhesive to start curing first. · When sealing contraction joints or cracks of up to 1 mm width, the Combiflex Tape may be completely covered with Combiflex Adhesive (mechanical protection). In this case the Combiflex tape must be applied with the red middle strip facing downwards. Use 2 mm Combiflex tape.

- The Combiflex adhesive may be overcoated with an epoxy coating. In this case do not smooth adhesive with detergent. If waiting time between application of adhesive and overcoating is to be longer than 2 days, adhesive must be broadcast with quartz sand immediately after its application.

Combiflex tape connections

- Overlaps to be 40 - 50 mm
- New tapes are connected by hot air through thermal welding. This will be assisted by simultaneously applying Colma-Cleaner.
- Old tapes e.g. in case of repairs, must be cleaned with a wire sponge and Colma Cleaner, followed by hot air welding with the aid of Sika Hypalon activator.

Connection of a Combiflex tape with Sika PVC external waterbar type AR (only for construction joints!)

Combiflex tape must overlap the AR type waterbar by at least the tape width.
Both tapes to be cleaned with Sika Colma-Cleaner and left to dry.
Prime Sika waterbar with Sika Primer-15 and let dry.
Prime Combiflex-Strip with Sika Primer-35 and let dry.
Glue both tapes together using Sikaflex-11 FC at a thickness of 1 - 3 mm.
Overcoat contact areas of both tapes by spatula with Sikaflex-11 FC.

Cleaning

Clean all tools and equipment immediately after use with Sika Colma-Cleaner.

Important

- If Combiflex joints are to be subjected to water pressure, the tape must be supported. Hard foam or joint sealant is recommended.
In case of negative water pressure Combiflex tape must be secured with a counter structure (steel profile) fixed on one side. **Limit** without support: for 5 mm joints 20° C and a 2 mm thick tape, max. 0.5 bar.
- If a bituminous wearing layer is installed on top of a previously installed Combiflex tape, the temperature of the hot mix must not exceed 180° C from 50 mm thickness. At up to 10 mm thickness temperature may be 220° C max. If necessary apply in layers and allow to cool in between.
- The Sikadur Combiflex tape must be protected from mechanical damage eg. with rubber granule mats especially when used to seal expansion joints.

Safety Instructions

Safety precautions

Apply barrier cream to arms and hands before starting work. Wear protective clothing (gloves and goggles). In contact with eyes or mucous membrane flush immediately with clean warm water and seek medical attention without delay.

Ecology

Combiflex adhesive : Do not dispose of into water or soil but according to local regulations.
Combiflex tape : May be incinerated with the approval of local authorities.

Toxicity

Tape: Non-toxic.
Adhesive: Please consult information on labels.

Transport

Tape: Non-hazardous.
Adhesive: Comp. A: Non-hazardous.
Comp. B: 8/65 c)



Sika Schweiz AG
P.O. Box 1300
CH-8048 Zürich
Phone +41 1 436 40 40 Telefax +41 1 436 45 55
E-Mail: ch-export@ch.sika.com



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