

System Product Data Sheet

Edition 26/11/2009

Identification no:

01 07 03 02 System

Sikadur®-Combiflex® System

Sikadur®-Combiflex® 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® System consists of a flexible Hypalon waterproofing tape 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
- Roof joints
- Basements
- Water retaining structures and drinking water reservoirs
- Joints between rigid and flexible surfaces
- 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

Characteristics / Advantages

- 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
- Fast curing
- Suitable for contact with drinking water
- Root resistant
- Good resistance to many chemicals
- Versatile system suitable for many difficult situations

Tests

Approval / Standards

WRAS: Test report No. M1015006B water byelaws scheme "Items which have passed full test of effect on water quality BS 6920" (19.02.01).



Product Data

Form

Appearance/ Colours	<i>Sikadur®-Combiflex® Tape:</i> Flexible light grey membrane <i>Sikadur® 31 CF Normal:</i> <i>Part A White</i> <i>Part B Dark Grey</i> <i>Parts A+B Concrete Grey</i> <i>Sikadur® 31 Rapid:</i> <i>Part A White</i> <i>Part B Dark Grey</i> <i>Parts A+B Concrete Grey</i>
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Packaging	<i>Sikadur®-31 CF Normal:</i> 6 kg units (A+B) Pre-batched unit 1.2 KG units (A+B) Pre-batched units <i>Sikadur®-31 Rapid:</i> 6 kg units (A+B) Pre-batched unit <i>Sikadur®-Combiflex® Tape:</i> Thickness: 1 mm Width: 10, and 20 cm Rolls of 25 m Thickness: 2 mm Width: 10, and 20 cm Rolls of 20 m <i>Other size widths are available</i>
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Storage

Storage Conditions / Shelf Life	<i>Sikadur®-Combiflex® Tape</i> 36 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.
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Technical Data

Chemical Base	<i>Sikadur®-31 CF Normal and Sikadur®-31 Rapid</i> Modified, solvent free, filled 2-part epoxy resin <i>Sikadur®-Combiflex® Tape</i> Modified Hypalon-Elastomer
Service Temperature	<i>Sikadur®-Combiflex® System:</i> -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® System Sikadur Combiflex 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

Tear off Strength

Sikadur®-Combiflex® System:

Sika® System test: Sikadur® 31 CF Normal applied to mortar prisms followed by extension of the sealing system.

Results: Tape rupture
Elongation: > 400%
Strength: > 4 N/mm²

Peel Strength

Sikadur®-Combiflex® System:

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

Results: Tape rupture
Elongation: > 400%
Strength: > 7 N/mm²

Resistance

Chemical Resistance

Sikadur®-Combiflex® System (Sikadur®-Combiflex® Tape bonded with, Sikadur®-31 CF Normal and Sikadur®-31 Rapid)

Long term to:

Water, lime water, cement water, seawater, salt solutions, domestic sewage, bitumen, bitumen emulsion coatings etc.

Temporary to:

Light fuel oil, diesel, diluted alkali and mineral acids, ethanol, methanol, petrol etc.

The above chemicals are a guide only. Regarding specific chemical resistance, exposure trials should be carried out.

System Information

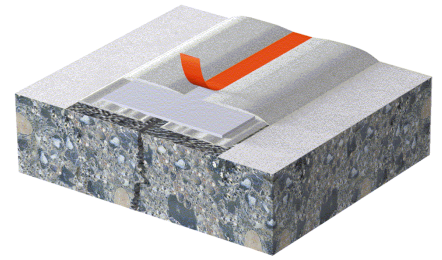
System Structure

The Sikadur®-Combiflex® System consists of a flexible Hypalon sealing tape and a Sikadur® epoxy adhesive.

- Sikadur®-Combiflex® Tape:
With prepunched edges and red central strip.

Two types of Sikadur® epoxy adhesive are available:

- Sikadur®-31 CF Normal
- Sikadur®-31 Rapid (approved for use with drinking water installations)



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

Application Details

Consumption

Sikadur®-Combiflex® Tape:

Sikadur®-Combiflex® 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
10 cm	2 mm	~ 0.8 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.

Steel:

Blastcleaning or equivalent mechanical means 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°C min /+30°C max
Sikadur®-31 Rapid:
+5°C min/+20°C max

Ambient Temperature *Sikadur®-Combiflex® Adhesive and Sikadur®-31 CF:*
Type Rapid: +5°C min/+20°C max
Type Normal: +10°C min/+30°C max

Sikadur®-31 Rapid:
+5°C min/+20°C 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°C)

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 potlife.



Application Method / Tools

Selection of tape size:

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.

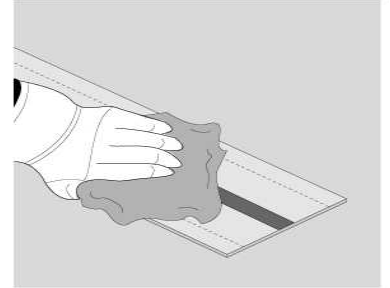
Max. permissible permanent elongation:

1 mm tape: 10% of the non adhered tape width
2 mm tape: 25% of the non adhered tape width

Note: For higher movement, place and fix tape in a loop into the joint.

Application of tape:

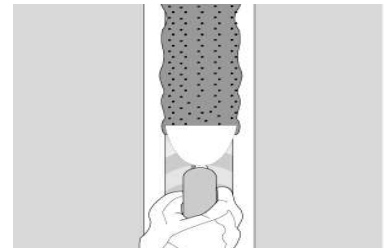
Remove transparent separation foil from the tape. Activate Sikadur®-Combiflex® Tape on both sides with Sika® Thinner C, using a rag saturated in Sika® Thinner C. Wipe thoroughly. Leave to dry for at least 0.5 hour and max.8 hours.



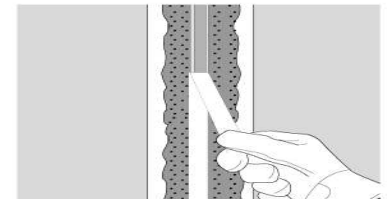
For overbonding existing sealants, expansion joints or cracks. The centre of the Combiflex tape must not be "bonded" to the substrate. In this case, apply masking tape on top of the sealant / joint / crack and on both sides of the joint before applying the adhesive.



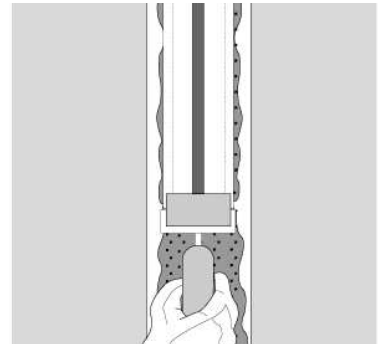
Apply thoroughly the mixed Sikadur®-31 adhesive on both sides of the sealant / joint / crack onto the prepared substrate, using a suitable trowel. If the concrete substrate is damp, work the adhesive well into the substrate with a brush. Layer thickness of adhesive should be 1 - 2 mm and the bonding 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 Combiflex tape remove the masking tape on top of the sealant / joint / crack.

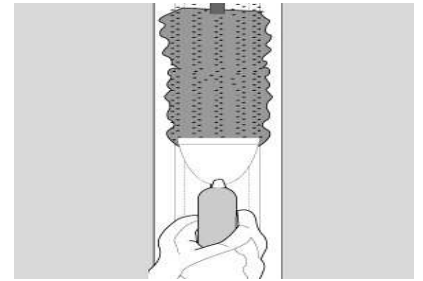


Apply the Combiflex tape within the open time of the adhesive. Press the tape firmly and without trapping air into the adhesive by using a suitable roller. The adhesive should be squeezed out on both sides of the tape by ~ 5 mm.

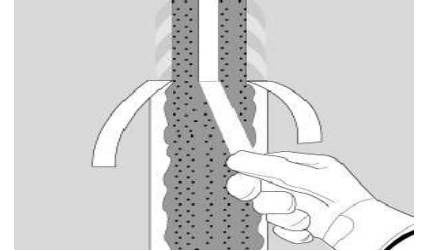


Apply the Sikadur®-Combiflex® Tape with the red middle strip facing upwards.

Let the base layer of the Sikadur®- Adhesive achieve initial set before the top layer is applied. If necessary activate the tape again if more than 8 hours elapses. Apply the adhesive at a thickness of ~ 1 mm over the full width of the Combiflex tape and extended a minimum of 10mm beyond edges of the Combiflex tape.



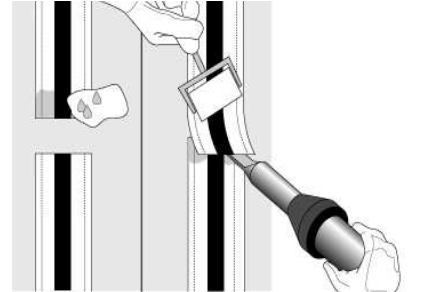
This is followed by the immediate removal of the red middle strip and the masking tape on both sides to ensure a neat and precise detail.



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® Tape

Tape ends are connected by hot air thermal welding. This is assisted by simultaneously applying Sika® Thinner C just before welding.



Overlaps have to be 40 - 50 mm.

Old tapes. e.g. in case of repairs, must be cleaned with wire wool and Sika® Thinner C, followed by careful hot air welding.

Forming internal/external 90° corners.

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

Sikadur® Combiflex® 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®-31 CF Normal and Sikadur®-31 Rapid 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.

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

Notes on Application / Limitations	<p>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.</p> <p>For exposure to negative water pressure the Sikadur®-Combiflex® Tape must be supported with steel plates secured on one side.</p> <p><i>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 used.</i></p> <p>If a bituminous wearing layer is installed on top of Sikadur®-Combiflex® System the temperature of the hot mix must not exceed +180°C. Up to 10 mm thickness the temperature may be max. +220°C. If necessary apply in layers and allow to cool in between.</p> <p>The Sikadur®-Combiflex® Tape must be protected from mechanical damage.</p>
Value Base	<p>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.</p>
Local Restrictions	<p>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.</p>
Health and Safety Information	<p>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.</p>
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