Sika is a globally active company in the speciality and construction chemicals business. It has subsidiary manufacturing, sales and technical support facilities in over 70 countries around the world. Sika is THE global market and technology leader in waterproofing, sealing, bonding, damping, strengthening and the protection of buildings and civil engineering structures. Sika has approx. 12,000 employees worldwide and is therefore ideally positioned to support the success of its customers.

Also available from Sika

Joint Sealing with Sika® Dilatec® Systems

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Joint Sealing with Sika® Dilatec® Systems
For Sealing Movement Joints, Construction Joints and Connections to Waterproofing Membranes

Bridges

Sika® Dilatec® allows elastic bridging and sealing of construction and movement joints to protect the bridge construction (reinforcement and others).

Flat Roofs

Sika® Dilatec® ensures waterproof jointing of and to roofing systems (bitumen and PVC sheet waterproofing membranes), perimeter edges, roof lights and domes.

Open-cut Tunnels and Underground Engineering

Sika® Dilatec® offers the complete sealing system of ends and overlaps to concrete, bitumen sheet waterproofing membranes and PVC sheet waterproofing membranes.

Key Advantages of the Sika® Dilatec® Sealing System

- Weather and water resistant
- Combination of Sika® Dilatec® tapes possible
- All kinds of junctions can be welded with hot-air guns on site
- Can absorb high joint movements

- Bitumen-resistant
- Root and UV resistant
- Can be welded to PVC membranes
- Performs well over a wide temperature range

Sika®
Joint Sealing with Sika® Dilatec® Systems
The Structure of the different Types of Sika® Dilatec® Tapes

Sika® Dilatec® offers a multi-functional joint and edge sealing system for concrete, PVC waterproofing membranes and bitumen sheet waterproofing membranes.

- **Sika® Dilatec® E-220**: Sealing tape for construction and movement joints of concrete and metal substrates.
- **Sika® Dilatec® ER-350**: End/edge tape for PVC waterproofing membranes onto concrete and metal surfaces.
- **Sika® Dilatec® BE-300**: End/edge tape for bitumen sheet waterproofing membranes installed on concrete and metal surfaces.
- **Sika® Dilatec® B-500**: Sealing tape for movement joints between bitumen sheet waterproofing membranes.
- **Sika® Dilatec® BR-500**: End/edge tape for bitumen sheet waterproofing membranes and as a jointing tape between PVC waterproofing sheet membranes and bitumen waterproofing materials.

Connection with:
- Epoxy
- Hot liquid bitumen
- Hot air welding

*BWM: Bitumen sheet waterproofing membrane*
Waterproof Sealing in Bridge Construction

Positioning of Sika® Dilatec® E-220 and Sikadur®-Combiflex® System

<table>
<thead>
<tr>
<th>Sika® Dilatec® E-220</th>
<th>Sikadur®-Combiflex® System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water pressure &lt; 20 m</td>
<td>X</td>
</tr>
<tr>
<td>Construction joint</td>
<td>*</td>
</tr>
<tr>
<td>Movement joint</td>
<td>X</td>
</tr>
<tr>
<td>Weldable with other Sika® Dilatec® Tapes</td>
<td>X</td>
</tr>
<tr>
<td>Bitumen-resistant</td>
<td>X</td>
</tr>
<tr>
<td>Weldable with PVC waterproofing membranes</td>
<td>X</td>
</tr>
<tr>
<td>Adhesion to Sikadur®-31 CF and -Combiflex® adhesive</td>
<td>X</td>
</tr>
<tr>
<td>Different thicknesses and widths available</td>
<td>–</td>
</tr>
</tbody>
</table>

Legend: **Recommended** • Not suitable • Possible, but not recommended

### Bridge Deck Edge Sealing

Durable, watertight joint sealing between bridge deck waterproofing systems and the parapet walls. Concrete damage due to salt water attack at the bottom of the parapet wall is therefore prevented by the Sika® Dilatec® BE-300 tape installation.

- **Substrate**
- **Bridge deck sealer**
- **Base bitumen layer**
- Sika® Dilatec® E-Edge embedded in liquid hot bitumen
- **Second bitumen layer**
- Sika® Dilatec® E-Edge embedded in Sikadur®-31 CF or Sikadur®-Combiflex® adhesive
- **Sika® Dilatec® BE-300**

### Parapet Joint Sealing

By hot air welding with a T-joint detail, a watertight connection is obtained between the Sika® Dilatec® E-220 and Sika® Dilatec® BE-300 tapes, therefore continuing the seal.

- **Substrate**
- **Construction joint**
- Sika® Dilatec® E-Edge embedded in Sikadur®-31 CF or Sikadur®-Combiflex® adhesive
- Sika® Dilatec® E-220
Waterproof Sealing on Flat Roofs

Sika® Dilatec® offers the complete jointing systems of and to flat roofs. With the combination of Sikaplan® PVC or bitumen sheet waterproofing membranes with the Sika® Dilatec® tapes, perimeter edges, roof lights and domes are sealed successfully.

Parapet Roofs without Edge Flashings

Roof edge flashings using Sika® unatec® ER-350 remain invisible on the outside of the parapet.

1. Sika® Dilatec® E-Edge embedded in Sikadur®-Combiflex adhesive or Sikadur®-31 CF
2. Sarnafil® G-410-15 (PVC-P membrane) with Sarnadur® 2170 (contact adhesive)
3. Sarnafil® G-410 (PVC-P membrane)
4. Sika® Dilatec® BH-350
5. Sika® Dilatec® ER-350
6. Perimeter fixing with Sarnabar® and S welding cord

Connections to existing Bitumen Sheets

For phased or local holding repairs to existing bitumen sheets, temporary waterproof connections to the roof surface can be produced with Sika® Dilatec® BR-500.

1. Sika® Dilatec® B-Edge embedded in liquid hot bitumen
2. Sika® Dilatec® BH-500
3. Sarnafil® G-410 (PVC-P membrane)
4. Perimeter fixing with Sarnabar® and S welding cord
5. Sika® Dilatec® H-Edge welded with Sarnatif® 476-15
6. Additional insulation
7. Old multi-layer bituminous roofing

Invisible Wall Connections

When visible sheet metal connections are not wanted by the client or their architect, normally for aesthetic reasons, a waterproof connection with Sika® Dilatec® ER-350 provides an almost invisible alternative.

1. Sikaflex® edge sealing
2. Racking rod
3. Metal strip
4. Sika® Dilatec® E-Edge embedded in Sikadur®-Combiflex adhesive or Sikadur®-31 CF
5. Perimeter fixing with Sarnabar® and S welding cord
6. Sika® Dilatec® H-Edge welded with Sarnatif® 476
7. Sika® Dilatec® ER-350
8. Sarnatif® 476 (PVC-P membrane)
9. Thermal insulation (add separation layer if required)
10. Vapour control layer

Invisible Wall Connections
Waterproof Sealing of Open-cut Tunnel and Underground Construction

**Underground Construction**

- Sika® Dilatec® B-500, E-220 and BE-300 offers the full end and expansion joint sealing system of bitumen sheet waterproofing membranes of underground construction.

**Compartment Arrangements of an Open-cut Tunnel**

- Due to the weldability of Sika® Dilatec® E-220 with Sikaplan WP, compartment arrangements can be established for open-cut tunnels.

**Transition from PVC to Bitumen Sheet Waterproofing Membranes of an Open-cut Tunnel**

- With Sika® Dilatec® BR-500 and ER-350, the transition from PVC to bitumen waterproofing membranes of trenchless to open-cut tunnels can be completed.

- The end of the polymer bitumen waterproofing membrane can be successfully sealed with Sika® Dilatec® BE-300.
Sika® Dilatec® Application

B-Edge

1. Install the first layer of bitumen waterproofing membrane. Cut in the joint area (if there is one).

2. Unroll the Sika® Dilatec® strip with the wide fabric B-edge facing up and fix the edges by soaking them with liquid hot bitumen; make sure that the narrow fabric strip is completely saturated.

3. Install the second layer of bitumen waterproofing membrane (or for single-layer applications 33 cm wide bitumen liner strips); 1–2 cm of the movement area has to be covered. Make sure that the wide fabric strip is completely saturated with hot liquid bitumen.

R-Edge

Weld (with hot-air gun or with welding machine) the PVC side of the Sika® Dilatec® R-Edge with any PVC-type waterproofing membrane or building component.

E-Edge

1. Substrate preparation by means of sand blasting, grinding etc., followed by vacuuming.

2. Mix Sikadur®-Combitflex® CF adhesive or Sikadur®-31 CF for a minimum of 3 minutes until the mix is homogeneous.

3. In the location of the fabric strips, apply Sikadur®-Combitflex® CF adhesive or Sikadur®-31 CF without gaps (layer thickness 1–2 mm and overlap of 10 mm). For a cleaner edge, an adhesive masking tape can be used and then removed after application (before curing).

4. Place the Sika® Dilatec® strip with the wide fabric E-edge facing down. Press firmly into the epoxy, particularly at the sides, with a trowel and ensure the fabric area is soaked.

5. Apply second layout of Sikadur®-Combitflex® CF adhesive or Sikadur®-31 CF on top of the fabric “wet on wet”. Cover and fully embed the fabric edges and cover 1 cm of the PVC strip. The top layer of epoxy can be broadcast with Sikadur®-501 sand 0.3–0.9 mm if required.

Sika® Dilatec® Strip Connections

Mitred Joint

1. Take care that all weldings are watertight!
2. Substrate must be dry, clean and free of dust, rust, oil and grease.
3. Age of concrete 4–6 weeks depending on climatic conditions.

Butt Joint

1. The elastic center expansion must not be inhibited; this is achieved by lapping the centre part (PVC only) and welding it with hot-air tool
2. The rigid side strips must be joined rigidly; this is achieved by:
   - lapping the fabric strips for epoxy soaking
   - butt-joining the remaining area (fabric on bottom side, PVC on top) and welding a PVC patch onto the PVC side (top)

3. The fabric is rigidly joined; this is achieved by:
   - lapping the fabric strips for epoxy soaking
   - butt-joining the remaining area (fabric on bottom side, PVC on top) and welding a PVC patch onto the PVC side (top)
Global Case Studies

Joint Sealing of a Bridge Deck Waterproofing System

**Problem:**
A system using polymer-modified bitumen sheet waterproofing was selected for the deck waterproofing on a road bridge. As the bridge was exposed to wide temperature fluctuations, high expansion joint movement was expected and this could not be accommodated by the bitumen sheets themselves.

**Joint sealing system requirements:**
- Bitumen-resistant
- Able to accommodate the large joint movements
- Joint sealing systems can be combined with each other
- Resistance to de-icing salts, oils and other chemicals

**Sika solution:**
- Watertight joint sealing between the bridge deck waterproofing system and the parapet walls and in the expansion joints with Sika® Dilatec® BE-300
- Vertical parapet joint sealing with Sika® Dilatec® E-220

Roof Edge Flashings without Sheet Metal on a Parapet

**Problem:**
An edge flashing was not wanted on a parapet for aesthetic reasons. The end of the single-ply PVC roof waterproofing membrane joint to the concrete had to be invisibly sealed on the external edge of the parapet (facade side).

**Joint sealing system requirements:**
- Can be welded to PVC membranes
- Weather and water resistant
- UV light resistant
- Suitable for installation and service over a wide temperature range

**Sika solution:**
- Use of the end sealing tape Sika® Dilatec® ER-350, for waterproof jointing of the PVC sheet membranes to the concrete

Watertight Compartment for Waterproofing an Open-cut Tunnel

**Problem:**
A newly built open-cut tunnel lying below the water table is to be waterproofed with single-layer Sikaplan® PVC sheet membranes. Compartments are formed in the membrane system to make it easier to locate and inject any leaks that might occur in the event of any damage to the PVC membranes (in the construction phase or in service).

**Joint sealing system requirements:**
- Can be watertight bonded to concrete and PVC membranes

**Sika solution:**
- Compartments are created with Sika® Dilatec® E-220 tape bonded to the concrete and the Sikaplan® WP membranes. The Sika® Dilatec® E-220 is bonded to the concrete with Sikadur®-31 CF N and then heat welded to the Sikaplan® WP.

Expansion Joint and End Sealing of the Waterproofing System for a Below-ground Structure

**Problem:**
The waterproofing system selected for use on an underground car park to be built below the water table was based on bitumen waterproofing sheets. The expansion joints and the ends joining the system to the concrete therefore presented a problem to ensure the integrity of the waterproofing.

**Joint sealing system requirements:**
- Bitumen-resistant
- Root penetration resistant
- Resistant to chemicals

**Sika solution:**
- With Sika® Dilatec® B-500, E-220 and BE-300 tapes, all of the expansion joints and terminations at the ends of the bitumen sheet waterproofing membranes can be sealed and made watertight
Sika – global knowledge with a local presence

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