



Joint Sealing with Sika[®] Dilatec[®] Systems



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

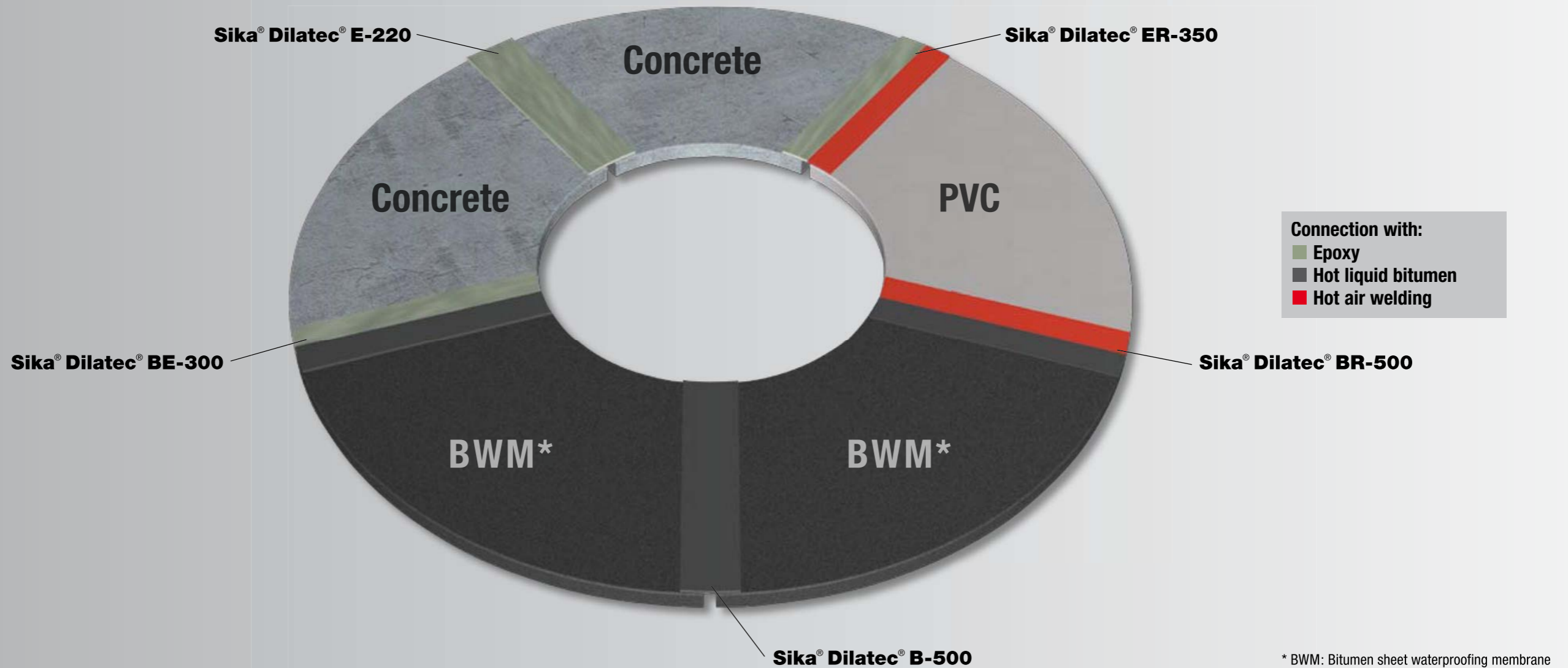
- Weather and water resistant
- Combination of Sika® Dilatec® tapes possible
- All kinds of junctions can be welded with hot-air guns on site
- Can absorb high joint movements
- Bitumen-resistant
- Root and UV resistant
- Can be welded to PVC membranes
- Performs well over a wide temperature range



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

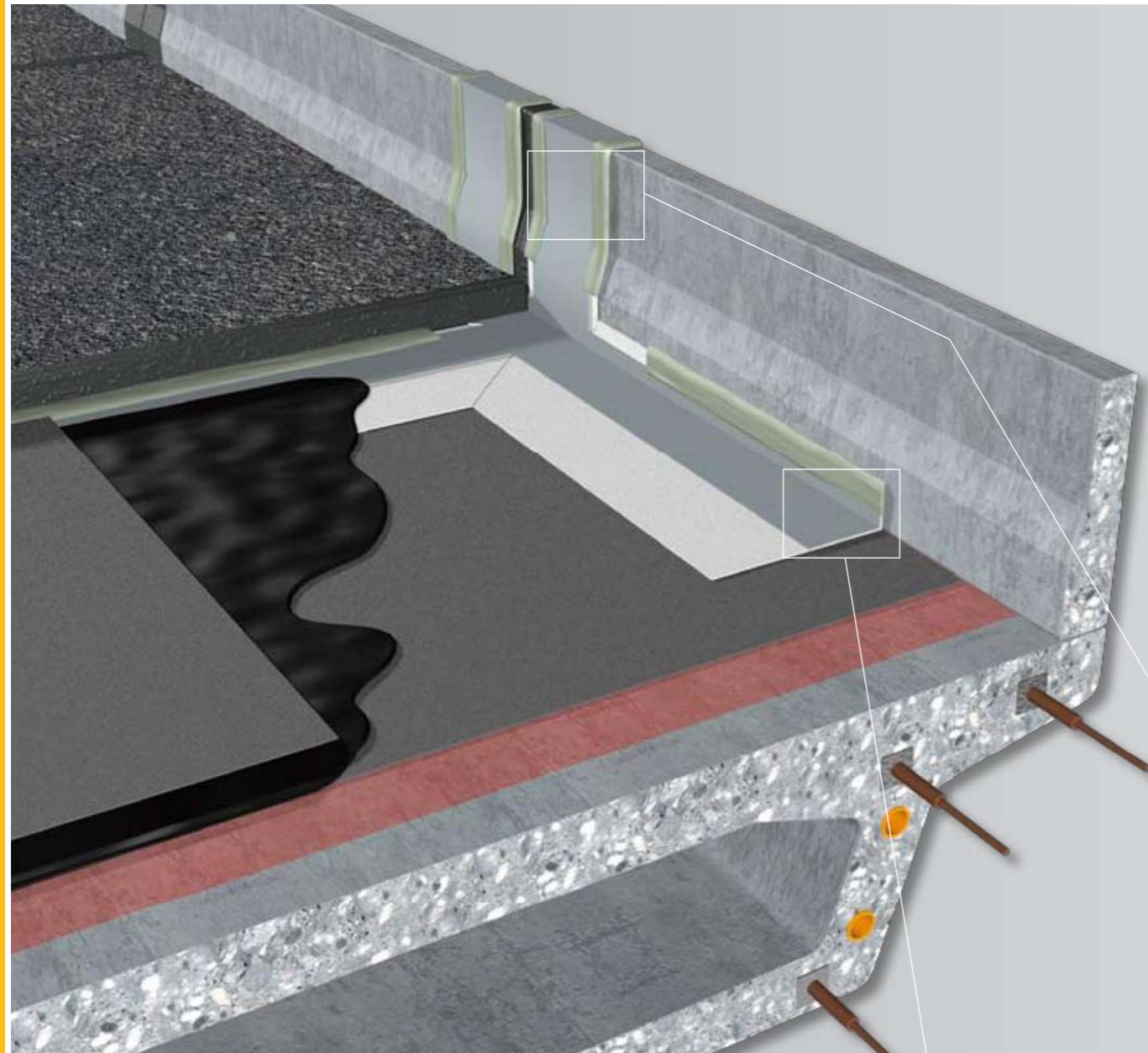
Sealing tape for movement joints between bitumen sheet waterproofing membranes

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



Waterproof Sealing in Bridge Construction



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

	Sika® Dilatec® E-220	Sikadur®-Combiflex® System
Water pressure < 20 m	X	X
Construction joint	*	X
Movement joint	X	X
Weldable with other Sika® Dilatec® Tapes	X	-
Bitumen-resistant	X	X
Weldable with PVC waterproofing membranes	X	-
Adhesion to Sikadur®-31 CF and -Combiflex® adhesive	X	X
Different thicknesses and widths available	-	X

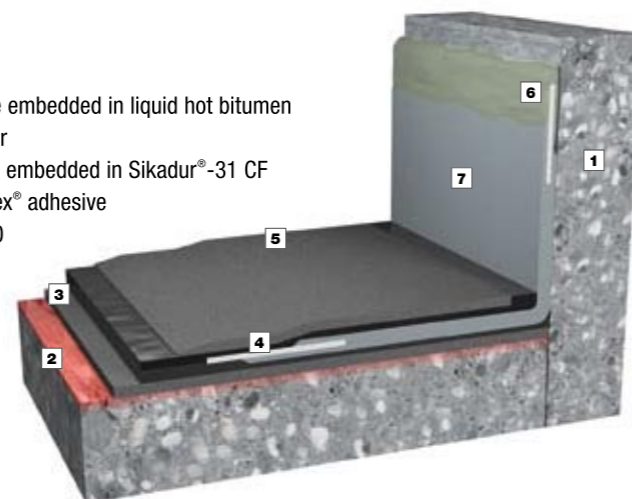
X Recommended - Not suitable * Possible, but not recommended



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.

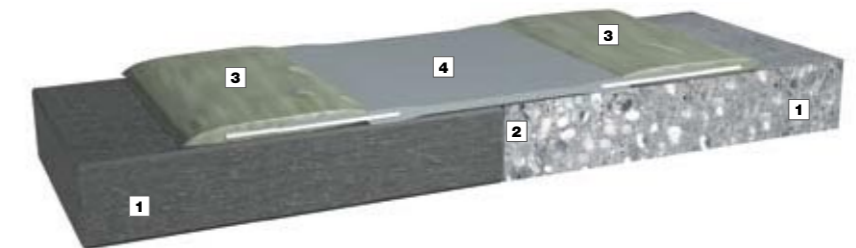
- 1 Substrate
- 2 Bridge deck sealer
- 3 First bitumen layer
- 4 Sika® Dilatec® B-Edge embedded in liquid hot bitumen
- 5 Second bitumen layer
- 6 Sika® Dilatec® E-Edge embedded in Sikadur®-31 CF or Sikadur®-Combiflex® adhesive
- 7 Sika® Dilatec® BE-300



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.

- 1 Substrate
- 2 Construction joint
- 3 Sika® Dilatec® E-Edge embedded in Sikadur®-31 CF or Sikadur®-Combiflex® adhesive
- 4 Sika® Dilatec® E-220



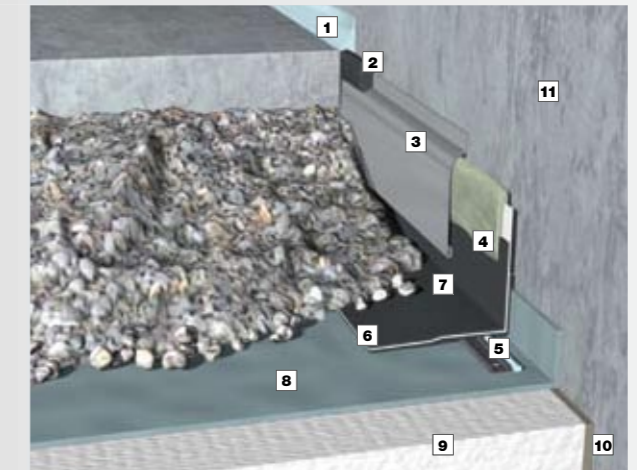
Waterproof Sealing on Flat Roofs

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.



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.

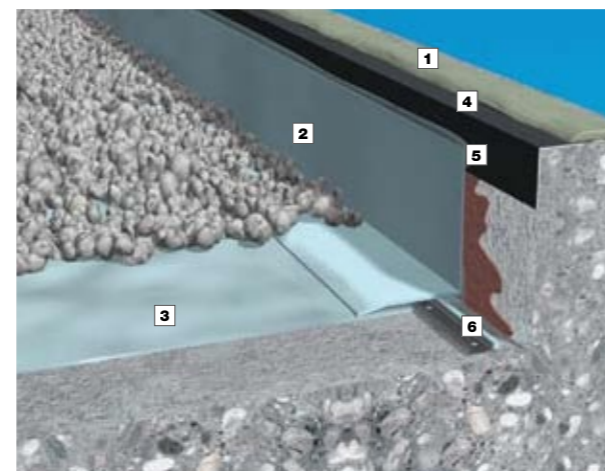


- 1 Sikaflex® edge sealing
- 2 Backing rod
- 3 Metal strip
- 4 Sika® Dilatec® E-Edge embedded in Sikadur®-Combiflex® adhesive or Sikadur®-31 CF
- 5 Perimeter fixing with Sarnabar® and S welding cord
- 6 Sika® Dilatec® R-Edge welded with Sarnafil® 476
- 7 Sika® Dilatec® ER-350
- 8 Sarnafil® 476 (PVC-P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

Parapet Roofs without Edge Flashings

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

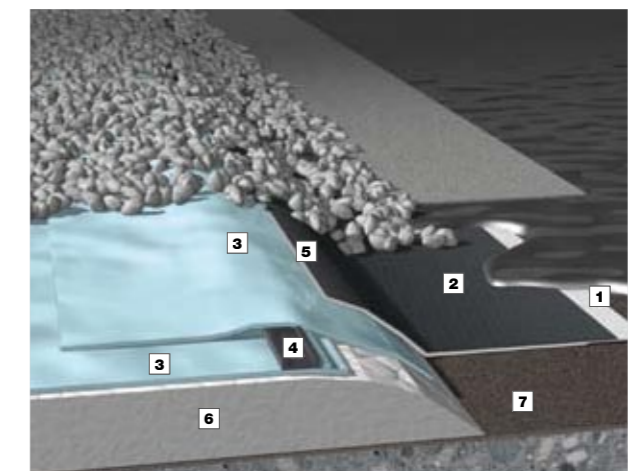
- 1 Sika® Dilatec® E-Edge embedded in Sikadur®-Combiflex® adhesive or Sikadur®-31 CF
- 2 Sarnafil® G-410-15 (PVC-P membrane) with Sarnacol® 2170 (contact adhesive)
- 3 Sarnafil® G-410 (PVC-P membrane)
- 4 Sika® Dilatec® ER-350
- 5 Sika® Dilatec® R-Edge welded with Sarnafil® G-410-15
- 6 Perimeter fixing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



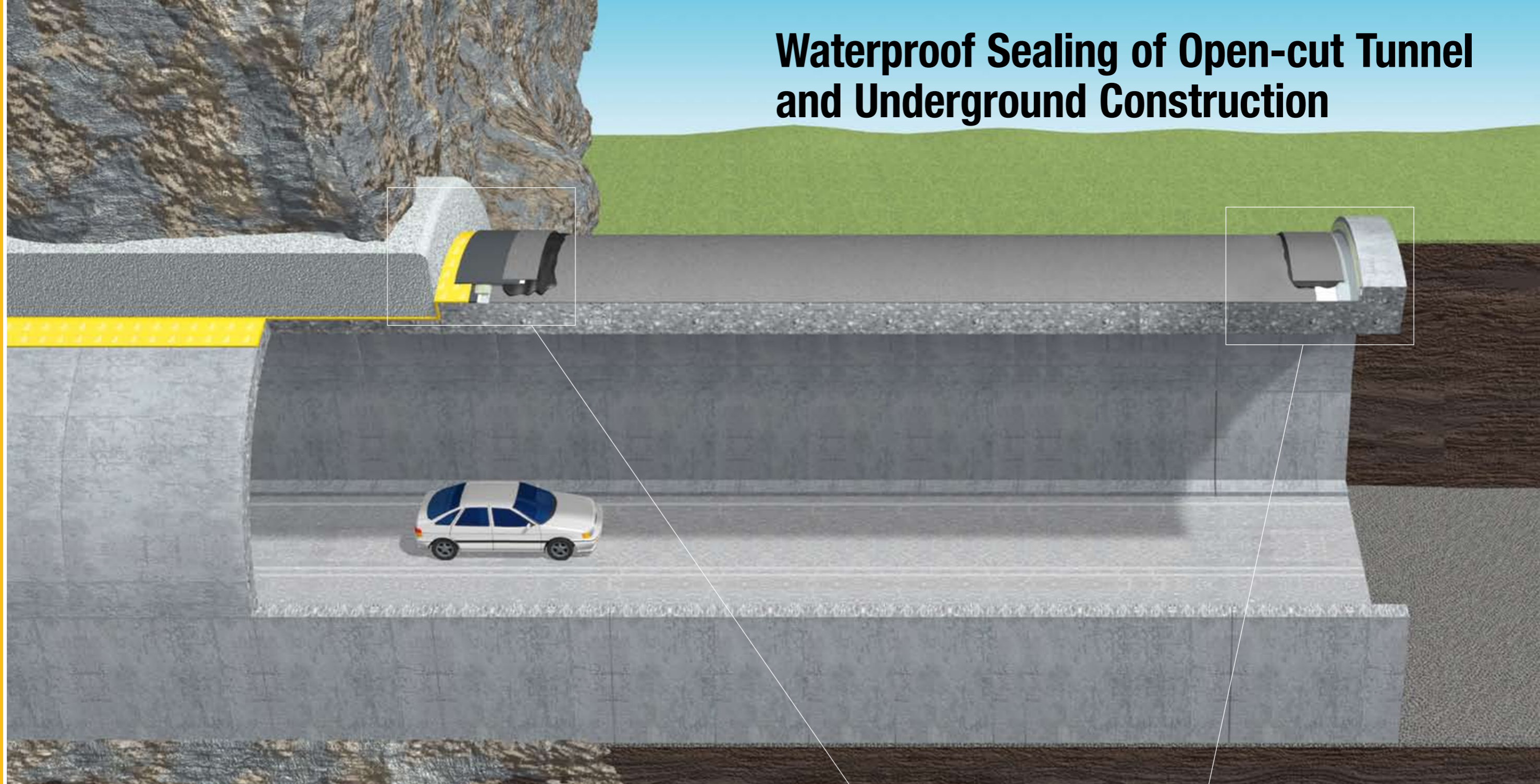
Connections to existing Bitumen Sheets

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**.

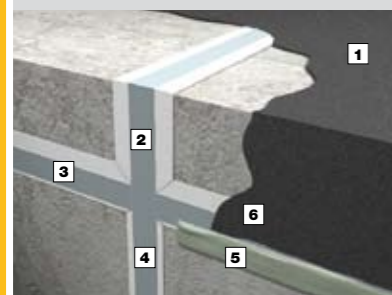
- 1 Sika® Dilatec® B-Edge embedded in liquid hot bitumen
- 2 Sika® Dilatec® BR-500
- 3 Sarnafil® G-410 (PVC-P membrane)
- 4 Perimeter fixing with Sarnabar® and S welding cord
- 5 Sika® Dilatec® R-Edge welded with Sarnafil® G-410-15
- 6 Additional insulation
- 7 Old multi-layer bituminous roofing



Waterproof Sealing of Open-cut Tunnel and Underground Construction



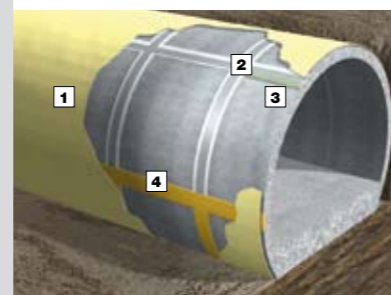
Underground Construction



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.

- 1 Bitumen sheet waterproofing membrane
- 2 Sika® Dilatec® B-500
- 3 Sika® Dilatec® BE-300
- 4 Sika® Dilatec® E-220
- 5 Sika® Dilatec® E-Edge embedded in Sikadur®-31 CF or Sikadur®-Combiflex® adhesive
- 6 Sika® Dilatec® B-Edge embedded in hot liquid bitumen

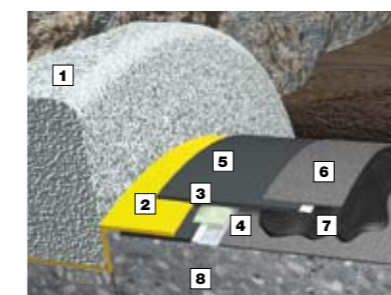
Compartment Arrangements of an Open-cut Tunnel



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

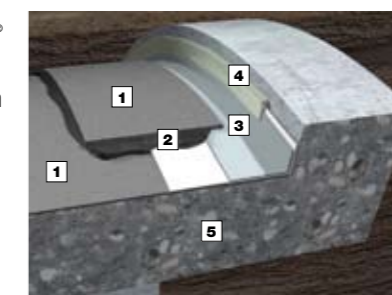
- 1 Sikaplan® PVC waterproofing membrane
- 2 Sika® Dilatec® E-220
- 3 Sika® Dilatec® E-Edge embedded in Sikadur®-31 CF or Sikadur®-Combiflex® adhesive
- 4 Sika® Waterbar PVC

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.

- 1 Shotcrete
- 2 Sikaplan® PVC waterproofing membrane
- 3 Sika® Dilatec® ER-350
- 4 Sika® Dilatec® E-Edge embedded in Sikadur®-31 CF or Sikadur®-Combiflex® adhesive
- 5 Sika® Dilatec® BR-500
- 6 Bitumen sheet waterproofing
- 7 Sika® Dilatec® B-Edge embedded in hot liquid bitumen
- 8 Concrete

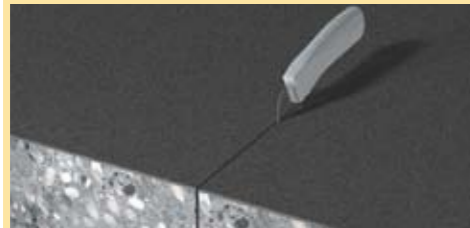


The end of the polymer bitumen waterproofing membrane can be successfully sealed with **Sika® Dilatec® BE-300**.

- 1 Bitumen sheet waterproofing
- 2 Sika® Dilatec® B-Edge embedded in hot liquid bitumen
- 3 Sika® Dilatec® BE-300
- 4 Sika® Dilatec® E-Edge embedded in Sikadur®-31 CF or Sikadur®-Combiflex® adhesive
- 5 Concrete

Sika® Dilatec® Application

B-Edge



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

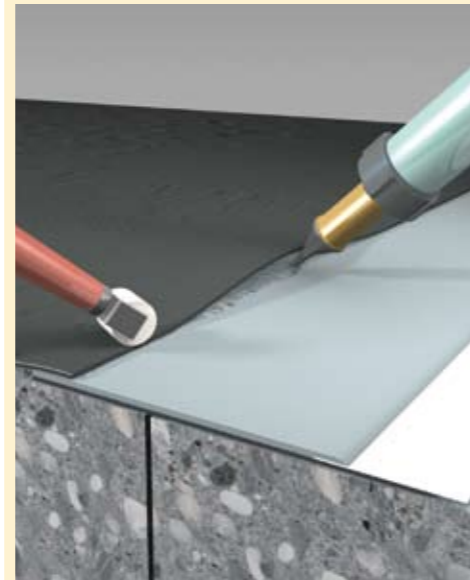


2. Unroll the **Sika Dilatec®** strip with the wide fabric B-edge facing up and fix the edges by soaking them with liquid hot bitumen; make sure that the narrow fabric strip is completely saturated.



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®-Combiflex® 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®-Combiflex® 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)

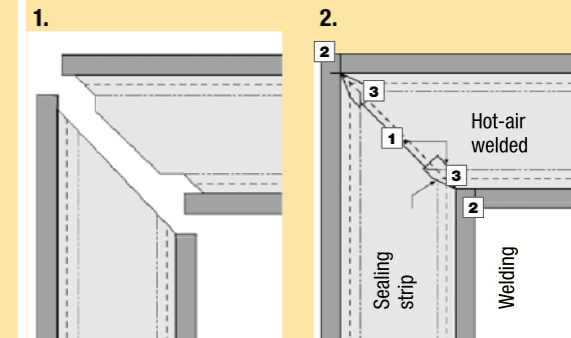


4. Place the **Sika Dilatec®** strip with the wide fabric E-edge facing down. Press firmly into the epoxy, particularly at the sides, with a trowel and ensure the fabric area is soaked.

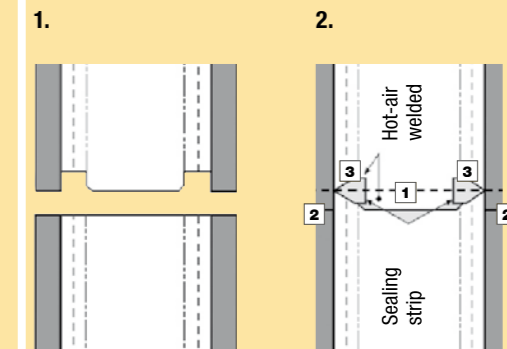
5. Apply second layout of **Sikadur®-Combiflex® CF** adhesive or **Sikadur®-31 CF** on top of the fabric "wet on wet". Cover and fully embed the fabric edges and cover 1 cm of the PVC strip. The top layer of epoxy can be broadcast with **Sikadur®-501** sand 0.3–0.9 mm if required.

Sika® Dilatec® Strip Connections

Mitred Joint



Butt Joint



- 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 1
- The rigid side strips must be joined rigidly; this is achieved by
 - lapping the fabric strips for epoxy soaking 2
 - butt-joining the remaining area (fabric on bottom side, PVC on top) and welding a PVC patch onto the PVC side (top) 3

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

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 (façade 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
- The joints had to be sealed and watertight with the waterproofing system
- 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.

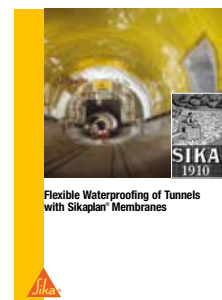
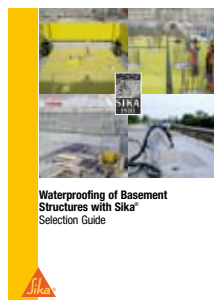


Joint Sealing with Sika® Dilatec® Systems



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, dampening, strengthening and the protection of buildings and civil engineering structures. Sika has approx. 12000 employees worldwide and is therefore ideally positioned to support the success of its customers.

Also available from Sika



Sika Services AG
Business Unit Construction
Speckstrasse 22
CH-8330 Pfäffikon
Switzerland
Phone +41 44 403 13 64
Fax +41 44 403 13 77
www.sika.com

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