



SIKA WATERBAR®

PVC WATERPROOFING FOR JOINTS IN CONCRETE

BUILDING TRUST





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SIKA WATERBARS

Sika Waterbars made from PVC-P can be used as flexible waterstops and are designed for the sealing of movement/expansion and construction joints in new watertight concrete structures. Their geometries and material characteristics are varied to make them suitable for use as effective waterstops in many different types of structures and joints.



JOINT WATERPROOFING FOR CONCRETE STRUCTURES



Movement/Expansion joints split components through their full thickness with joint gap of defined width. The reinforcement in movement joint is discontinuous. Movement/expansion joints allow differential movement due to temperature variations and/or load settlement in one or more directions of the area, sections or structures separates by the joint.

















Construction joints are designed to split areas of the structure into separate concrete sections for work scheduling reasons or as a structural measure to transfer load. The reinforcement in construction joints is therefore continuous through the joint.

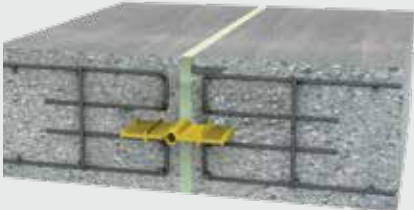



Connection joints are flat or indented joints which split the concrete section through its full thickness without a defined joint gap. The reinforcement in connection joint is discontinuous. When the concrete section contracts, joint movement (joint opening) is possible, and when it expands then pressure transmission is possible.

WATERBARS FOR DIFFERENT APPLICATIONS

Joint Type	Waterstopping waterbar type	Waterbars type
Movement/Expansion joints 	Internal movement/expansion joint waterbar 	Waterbar O 
	External expansion joint waterbar (*) 	Waterbar DR (*) 
Construction joints 	Internal construction joint waterbar 	Waterbar VE  Waterbar V 
	External construction joint waterbar 	Waterbar AR 
Connection joints 	Internal connection joint waterbar 	Waterbar DWall 

ADVANTAGES AND DISADVANTAGES OF INTERNAL AND EXTERNAL WATERSTOPPING WATERBARS

Waterbar type and location		
	Internal waterbar	External waterbar
		
Advantage	<ul style="list-style-type: none"> ■ Suitable for high water pressure ■ Protected from damage after concrete placement ■ Can be used with water pressure from the inside or outside without additional precautions 	<ul style="list-style-type: none"> ■ Particularly suitable for thinner concrete components ■ Reinforcement adaptation to the waterbar is not always necessary if the concrete cover is sufficient ■ Split stop-end formwork is not necessary ■ Easy to fix to the formwork or binding to the concrete base
Disadvantage	<ul style="list-style-type: none"> ■ Not suitable for thinner components ■ Reinforcement adaptation to the waterbar is always necessary ■ Concrete placement is more difficult with horizontal waterbar ■ Split stop-end formwork is necessary 	<ul style="list-style-type: none"> ■ Hard to clean ■ Can loosen during formwork stripping ■ Waterbars can be fitted without additional precautions only on the water contact side. Water pressure can be absorbed only from this side without support ■ Not suitable for slab soffits because the downward facing stop anchors cannot be reliably cast in ■ Damage is possible during subsequent construction works

DESIGN PRINCIPLES FOR JOINT WATERPROOFING WITH WATERBARS

The waterbars must stop water penetrating through the joints into a structure and/or out of it; both in the case drinking water reservoirs and tanks, keeping the clean water in and dirty or contaminated ground water out. Successful joint waterproofing design principles and factors include:

- Correct design and dimensioning of the joint as an movement/expansion, connection or construction joint
- Selection of the waterbar material
- Selection of the form, profile and dimensions of waterbars
- Correct location of the waterbars in the concrete structure or component
- Correct fabrication and assembly of the complete waterstop system, including watertight butt joints and connections
- Correct installation of the waterstop system

The design engineer should always consider all of these factors as early as possible in the design and specification stage, with subsequent changes only allowed with the engineer's specific approval and written permission.



WATERBAR FORMS AND PROFILES

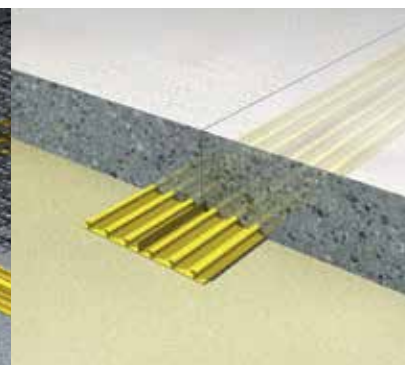
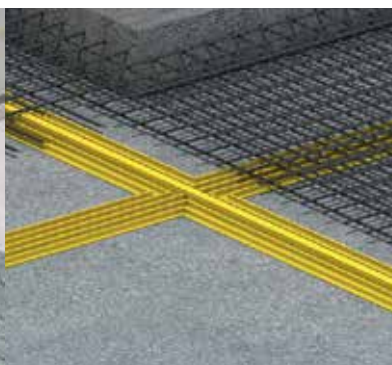
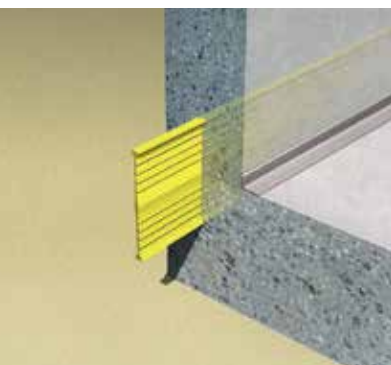
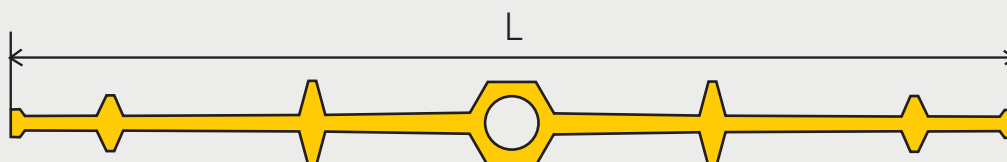
At Sika we can produce the profiles to meet the most demanding applications.

Internal waterbars: Installation in the center of concrete structures

Use	Type	With (L) (mm) (±5 mm)	Roll Length (m)	Normal Thickness (mm) (±10 mm)
Construction Joints	V-15	150	20	3.0 - 5.0
	V-20	200	20	3.0 - 5.0
	V-25	250	20	3.0 - 5.0
	V-32	320	15	3.0 - 8.0

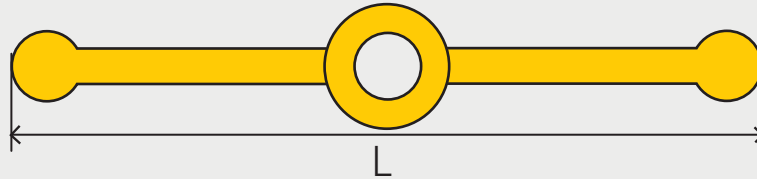


Use	Type	With (L) (mm) (±5 mm)	Roll Length (m)	Normal Thickness (mm) (±10 mm)
Movement/Expansion Joints	O-15	150	20	3.0 - 4.5
	O-20	200	20	3.0 - 4.5
	O-25	250	20	3.0 - 4.5
	O-32	320	15	3.0 - 8.0



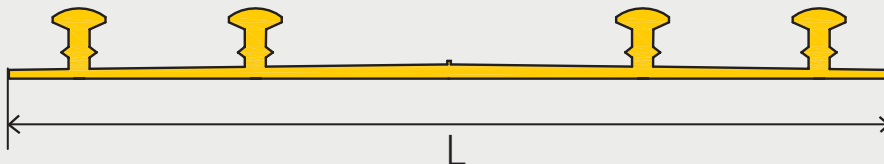
WATERBAR FORMS AND PROFILES

Use	Type	With (L) (mm) (±5 mm)	Roll Length (m)	Normal Thickness (mm) (±10 mm)
Connection Joint	O-20 DWall	200	12	9.5
	O-25 DWall	250	12	9.5

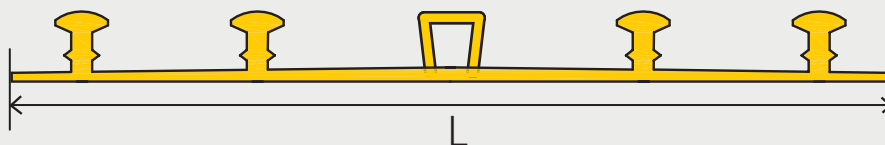


External waterbars: Installation on the surface of concrete structures

Use	Type	With (L) (mm) (±5 mm)	Roll Length (m)	Normal Thickness (mm) (±10 mm)
Construction Joints	AR-25	250	20	4.0



Use	Type	With (L) (mm) (±5 mm)	Roll Length (m)	Normal Thickness (mm) (±10 mm)
Movement/Expansion Joints (*)	DR-20	200	20	3.0
	DR-25	250	15	4.0



(*) Note: This product is not available at the moment

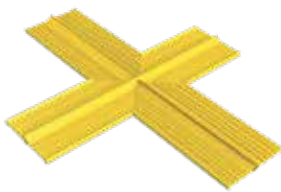
WATERBAR PHYSICAL PROPERTIES

Property	Requirement	Test
Density	~ 1.40 (±0.2) kg/l	BS 2782:620
Tensile	12 Mpa (±5%)	ISO 527-2 ASTM D412
Elongation at break	300% (±5%)	ISO 527-2 ASTM D412
Shore-A hardness	>70	ISO 868-2003 (E)
Water absorption	≤1%	ISO 62

WATERBAR JOINTING AND WELDING TECHNOLOGY

Waterbars must be joined together to form a closed waterstopping system. All of the anchor ribs in waterbar connection and butt joint areas must remain continuous and able to form a waterproof joint. Joints in the waterstopping system at corner, T-joints, intersections and junctions must be formed by prefabricated waterbar profiles wherever possible, with only simple butt joints being produced on site.

No.1: Cross piece flat



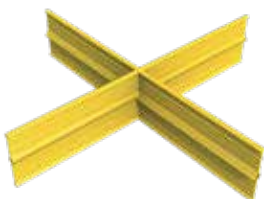
No.2: T-piece flat



No.3: L-piece flat



No.4: Cross piece vertical



No.5: T-piece vertical

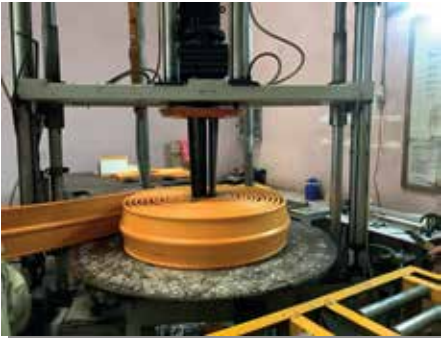


No.6: L-piece vertical



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MANUFACTURE AND STORAGE

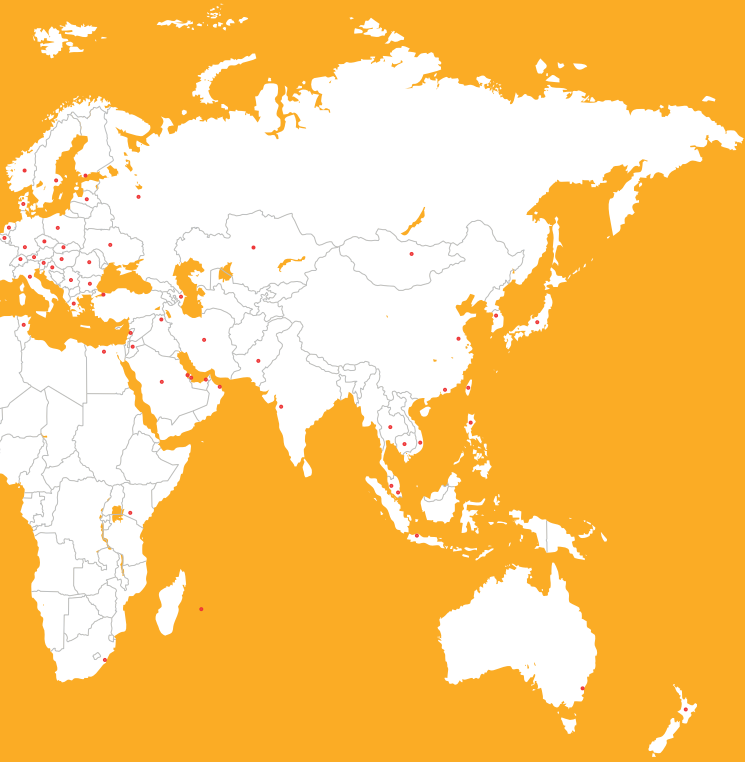


INSTALLATION





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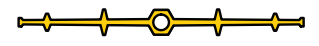









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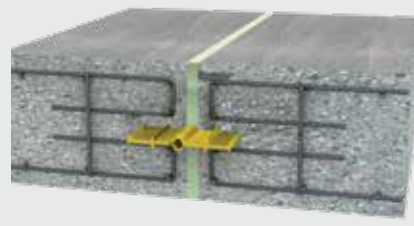

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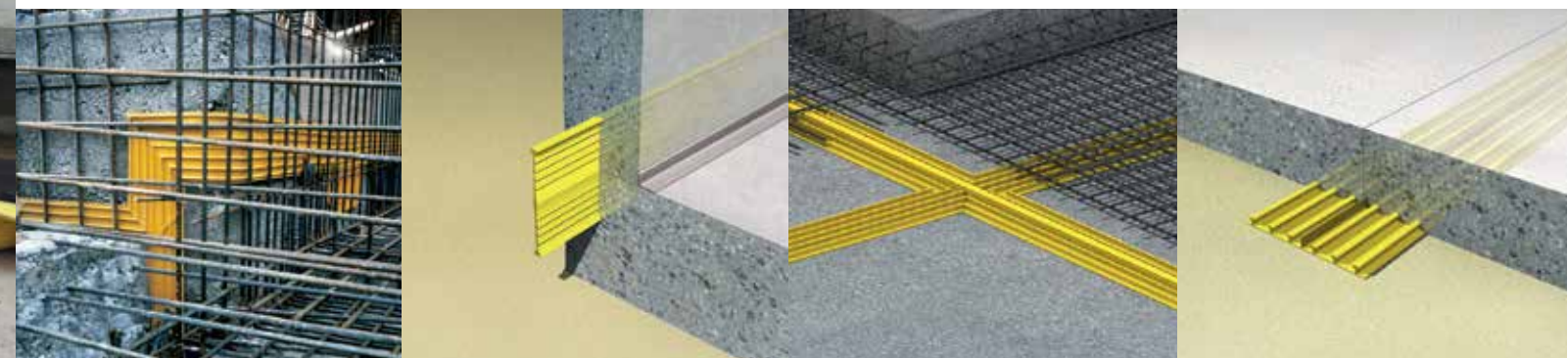
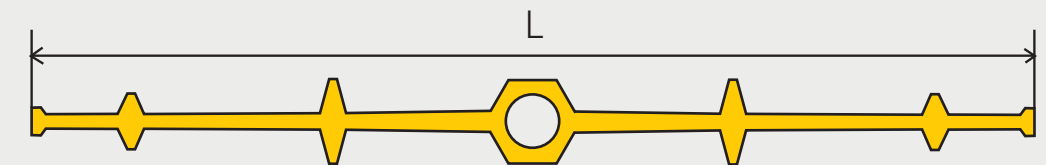
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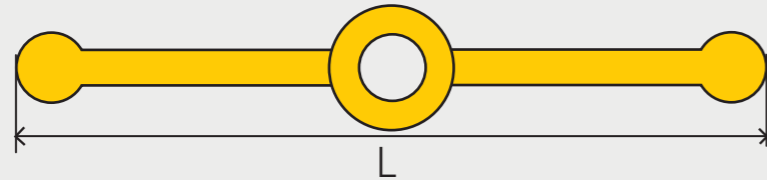


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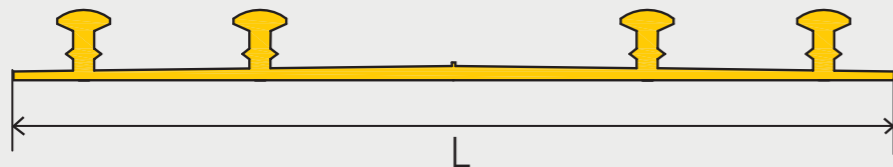
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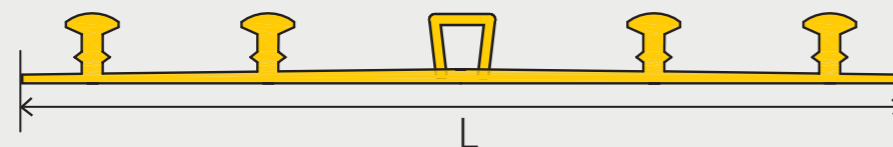


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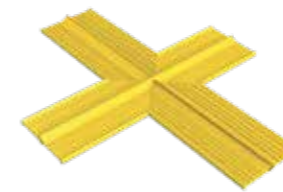
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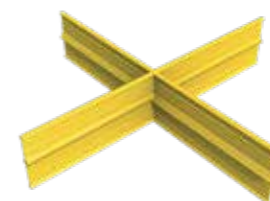
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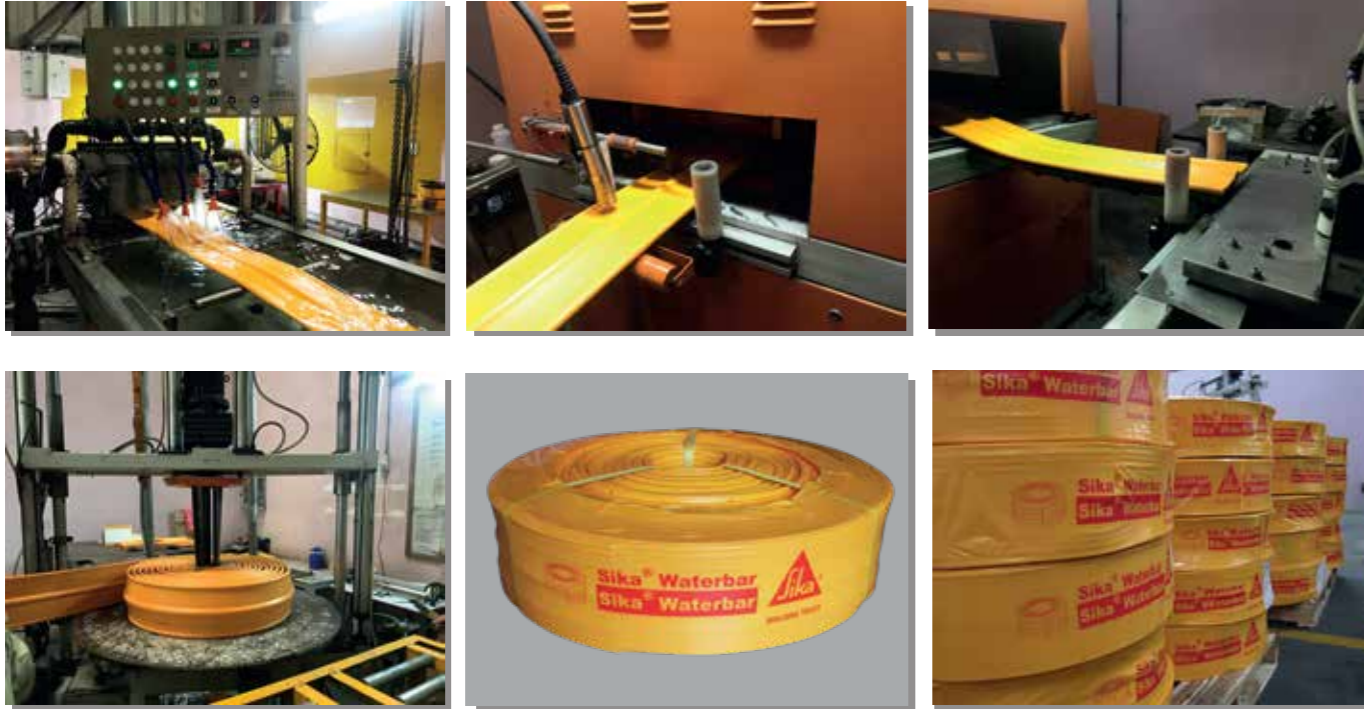


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MANUFACTURE AND STORAGE



INSTALLATION

