

# Sika®-Waterbars

## Flexible PVC waterstops

Construction

### Product Description

Flexible PVC waterstops used to seal construction and expansion joints in concrete structures. Sika®-Waterbars are available in different sizes and types, depending on their use.

### Uses

Sika Waterbars are used to seal construction and expansion joints:

- In water retaining structures such as reservoirs, water towers, dams, spillways, canals, swimming pools, sewage tanks, etc.
- To keep water out of concrete structures such as basements, underground car parks, tunnels, subways, retaining walls, etc.

### Characteristics / Advantages

- High quality PVC for long durability
- Suitable for high water pressure
- Easy to weld on site
- Many different sizes and types available, depending on their use

### Tests

#### Approval / Standards

Sika®-Waterbars conform to the requirements of BS 2571.

### Product Data

#### Form

#### Colour

Yellow

#### Packaging

20 m rolls

### Storage

#### Storage Conditions / Shelf Life

5 years from the date of production when stored in original unopened packaging in dry conditions and protected from UV light at temperatures between 10°C and 25°C.

### Technical Data

#### Type

Polyvinyl Chloride

#### Specific Gravity

Maximum 1.40

BS 2782: 620

#### Temperatures

- Service -35 to +55°C
- Welding ~ 180°C



## Mechanical / Physical Properties





<b>Tensile Strength</b>	Minimum 12 N/mm <sup>2</sup>	BS 2782: 320A
<b>Shore 'A' Hardness</b>	75 ± 5	BS 2782: 365B
<b>Elongation at Break</b>	Minimum 300%	BS 2782: 320A
<b>Water Absorption</b>	Maximum 120 mg (at 23°C)	BS 2782: 430A
<b>Thermal Stability</b>	Minimum 70 (Congo Red Test at 180°C)	BS 2782: 130A

## Resistance

<b>Chemical Resistance</b>	■ Permanent	Water, seawater and sewage
	■ Temporary	Diluted inorganic alkalis, mineral acids and mineral oils

## Sika®-Waterbar Profiles

### Profiles

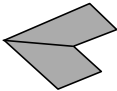
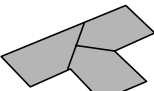
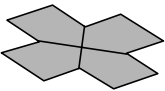
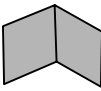
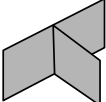
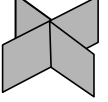
Uses		Types	Width mm (± 5 mm)	Roll Length m	Normal Thickness mm (± 10%)
<b>Centrally Placed Waterbars:</b> Installation in the center of concrete structures					
Construction Joints		V-15M	150	20	3.0 – 5.0
		V-20M	200	20	3.0 – 5.0
		V-25M	250	20	3.0 – 5.0
Expansion Joints		O-15M	150	20	3.0 – 4.5
		O-20M	200	20	3.0 – 4.5
		O-25M	250	20	3.0 – 4.5
<b>Surface Waterbars:</b> Installation on the surface of concrete structures					
Construction Joints		AR-25M	250	20	4.0
Expansion Joints		DR-20M	200	20	3.0
		DR-25M	250	20	4.0

### Important

The indicated maximum waterhead for each waterbar type is related to the system behaviour concrete-PVC normal design and based on practical experience.

### Special Corner And End Places

A wide range of standardised prefabricated junction pieces are also available allowing easy site welding of butt joints to Sika-Waterbar junction pieces. Customised pieces can be made available. In such cases, drawings must be provided giving exact dimensions and jointing details.

L-Piece, Flat 	T-Piece, Flat 	Cross-Piece, Flat 
L-Piece, Vertical 	T-Piece, Vertical 	Cross-Piece, Vertical 

Sika recommends the use of its specialised welding equipment for on-site welding which consists of thermostatically-controlled welding blades and special welding jigs (each type of Waterbar requires its own welding jig to suit the particular shape).

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## System Information

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### Application Details

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<b>Placing Of Waterbars</b>	Placing is executed in accordance with the engineer's drawings on which the waterbar profile and the position required are marked. Level differences, bends, junctions, etc. should be carefully considered before placing. The use of factory produced junction pieces are encouraged so that on-site welding is reduced to only simple butt joints, thereby minimising joint failure. Sika-Waterbars are placed continuously, thereby maintaining an integral sealing network.
<b>Placing The Concrete</b>	<p>Sika-Waterbars provide an effective and thorough means of waterproofing. However, care must be taken to ensure that concrete is well placed and compacted around the waterbar area.</p> <p>The Sika-Waterbars perform only if both sides are well embedded in the concrete. The accumulation of coarse aggregates (honeycombs) should be avoided around the waterbars. Only dense, well compacted concrete can ensure proper sealing between the concrete and Sika-Waterbars.</p> <p>Placing of fresh concrete near the Sika-Waterbars requires care or it may be forced from its position by pressure of the fresh concrete. To prevent this, the same concrete pressure must be present on both sides of the waterbar during placing. The consistency of the concrete itself should be neither too plastic nor too stiff and the aggregate must be well graded. Vibration should be executed with care.</p>
<b>Concreting The Second Stage</b>	The concrete around the waterbar should be thoroughly checked for honeycombing on the stopends and repaired if necessary. The waterbar must be cleaned of all hardened concrete remnants adhering from the first concrete stage. The same precautions highlighted above should also be observed during second stage concreting.

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### Application Instructions

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<b>Waterbar Selection</b>	<p>The selection of a suitable waterbar is governed by the type of joint, location of waterbar, concrete thickness, grade or concrete, reinforcement position, expected movement (expansion / shear) as well as waterhead / pressure to which it is to be exposed to.</p> <p>However, a simple rule-of-thumb for selection is as follows:</p> <ul style="list-style-type: none"><li>■ Up to 320 mm thick slab / wall Waterbar width should be equal to or approximating to the slab / wall thickness, example for slabs 200 mm thick, select 200 mm waterbar size.</li><li>■ Above 250 mm thick slab / wall Select largest waterbar size.</li></ul> <p>Note: Depending on the requirements by the engineer, 2 layers of waterbars may be required for high water pressure and / or deep section.</p>
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<b>Application Methods / Tools</b>	<p><b>Centrally Placed Waterbars</b></p> <ul style="list-style-type: none"><li>■ <i>Fixing To Reinforcement</i> Pre-punched eyelets are located in the outer flanges of the profiles. These simplify the fixing of waterbars to the steel reinforcement with tie wires to ensure the waterbars are not displaced during concreting.</li><li>■ <i>Fixing To Formwork</i> A 2-part (split) formwork may be used (preferred). In this method, allow half of the waterbar to jut out while the other half is cast-in. This waterbar is clamped between the formwork.</li></ul> <p>See "Typical Detailing of Sika-Waterbars", Figure 1 and 2.</p> <p><b>Externally Placed Waterbars</b></p> <ul style="list-style-type: none"><li>■ <i>Fixing To Slab</i> Place the waterbar flat on the lean concrete or base of the structure. The formwork for the stopends will terminate in the middle of the waterbar, allowing half of the waterbar to be cast while the other half is exposed to receive the next casting.</li></ul> <p>See "Typical Detailing of Sika-Waterbars", Figure 3.</p> <p>Note: When working with expansion joints where there is a central bulb, it is important that the bulb should not be cast into the first pour of the concrete but remains exposed (free).</p>
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**Application Method / Tools (cont.)**

**Welding**

Sika-Waterbars are made from thermoplastic PVC and therefore allow an easy on-site welding. However, it is recommended to use factory fabricated junctions such as T, L, X and Corner pieces. The ends are heated with a welding blade until the PVC melts (without burning or charring). The welding blade is removed and the molten ends are immediately pressed together. The welded joint should be inspected once it has cooled.

Sources of welding errors:

- Irregularity of cut edges
- Insufficient or excessive heating of blade
- Dirt accumulation on blade including charred remains of PVC. Clean PVC from blade while it is still hot.

**Stripping**

Removal of the formwork around waterbars must be done with care.

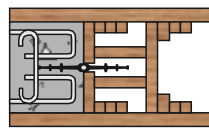
**Cleaning of Tools**

Clean all tools and application equipment with water immediately after use. Hardened / cured material can only be mechanically removed.

**Typical Detailing of Sika®-Waterbars**

**Split Formwork With Sika-Waterbars "O" Profiles**

Figure 1



The "O" Profile Sika-Waterbars may also be used in conjunction with split formwork. However care should be taken to ensure that the "O" ring is not squashed flat between the two forms. This method of installation increases the capacity of the Sika-Waterbars to accommodate expansion.

**Split Formwork With Sika-Waterbars "V" Profiles**

Figure 2



The "V" Profile Sika-Waterbars is fitted into the split formwork or shuttering for casting centrally into the stopends. It is used for construction joints and movement joints where nominal movement is anticipated, such as basement or retaining walls.

**Surface Waterbars Using "AR" Profiles**

Figure 3



Surface Sika-Waterbars are for installing into the face of the concrete structures. They are used for construction joints with slight to medium water pressure and are fixed on the water side of the concrete wall or floor by attaching it temporarily to the formwork during concrete placement. The protruding ribs become cast into the concrete to provide an excellent watertight seal while at the same time securely anchoring the Sika-Waterbars to the structure.

**Value Base**

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

**Health and Safety Information**

For information and advice on the safe handling, storage and disposal of chemical products, users should refer to the most recent Material Safety Data Sheet (available upon request) containing physical, ecological, toxicological and other safety-related data.

**Legal Note**

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 in accordance with Sika's recommendations. 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 user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.



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