

# WATER-BAR™ XR-2010

Hydrophilic Rubber Waterstop - Freshwater Use

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## Product Description

WATER-BAR™ XR-2010 is a preformed, 20mm x 10mm rectangular section, modified rubber waterstop. On contact with water, the hydrophilic rubber swells, increasing in volume by over 300% in 9 to 12 days. It stops water passage by the compressive force generated by the rubber's moisture induced expansion and its natural resilience. Small movements in the joint are taken up by the re-swellable seal of the product.

## Product Uses

Used in conjunction with a fully bonded sheet or liquid applied waterproofing membrane, it provides a secondary line of waterproofing defense against water ingress through static construction joints, cold joints and pipe penetrations in freshwater environments.

Typical applications include:

- Below ground construction joints to retaining walls and footings, lift pits, basement slabs, basement walls, basement slab-to-wall joints, pile-to-slab, pile-to-pile cap and pile-to-capping beam connections
- Pipe and conduit penetrations through structural concrete
- Above ground slab-to-slab and slab-to-wall construction joints to podiums, roof tops and terraces
- Construction joints in civil applications such as road and rail tunnels, water storage tanks and reservoirs

## Advantages & Features

- Contains no bentonite materials – provides long term performance
- Simple installation – roll out and mechanically fix at maximum 300mm centres
- Supplied as light weight 10 meter rolls
- No welding or complex detailing required
- May be installed to rough or scabbled concrete surfaces by bedding to SWELLSEAL® Mastic WA hydrophilic mastic before mechanically fixing
- Expansion volume increase of over 300%
- Greater than 450% elongation
- Slow expansion rate to prevent damage to freshly place concrete during curing
- Resistant to over 50m water head pressure (>500 kPa)
- Swelling properties unaffected by long term wet / dry cycling with variation in water table levels
- Swelling properties unaffected by freeze / thaw cycling
- Maintains an effective seal in submerged environments
- Hydrophilic nature is chemically bound within the rubber compound. Non-leaching and non-migratory
- Low VOC – <10 g/L
- Salt water, brackish water, chlorinated water grade is available - WATER-BAR™ XR-2010SW

## Product Properties

PROPERTY	TYPICAL VALUE	TEST METHOD
Waterstop Properties		
Material Chemistry	Hydrophilic synthetic rubber	
Appearance	Black, rectangular section, as a 10 meter roll	
Specific Gravity <sup>1</sup> (g/ml)	1.36	
Solids Content (%w/w)	100	
VOC (g/L)	<10	ASTM D3960
Shore A Hardness (°A)	< 50	ASTM D2240
Tensile Strength (MPa)	> 1.9	
Elongation (%)	> 450	
Service Temperature Range (°C)	-30 to +50	
Hydrostatic Pressure Resistance (m / bar)	> 50 / 5	
Volume Expansion – Freshwater <sup>1</sup> (%)	> 300	In-House
Typical Expansion <sup>1</sup> – 1-day Immersion (%)	30	In-House
Typical Expansion <sup>1</sup> – 3-day Immersion (%)	100	In-House
Typical Expansion <sup>1</sup> – 5-day Immersion (%)	220	In-House
Typical Expansion <sup>1</sup> – 9-day Immersion (%)	280	In-House
Typical Expansion <sup>1</sup> – 13-day Immersion (%)	320	In-House
Typical Expansion <sup>1</sup> – 18-day Immersion (%)	330	In-House

The above values and properties do not constitute a specification.

1 – Tested at 23°C with sample fully submerged in freshwater.

## Design

- Structural design of construction joints must limit maximum joint width to  $\leq 1.0\text{mm}$
- Concrete slab / wall pours must be staggered to allow concrete shrinkage at construction joints to complete, maintaining the final joint width at  $\leq 1.0\text{mm}$ .
- If joint widths cannot be maintained  $\leq 1.0\text{mm}$ , structural design must be altered or the joints regarded as movement joints, incorporating an appropriate waterstop system such as PVC external "Rearguard" waterstop or 3rd party joint treatment designed to accommodate the designed movement
- Incorporate waterstops only as secondary joint sealing solutions, with the primary solution being a physical waterproofing membrane

## Safety and Handling

- Installers must read and understand the product label and Safety Data Sheet (SDS) for each product.
- All users should acquaint themselves with this information prior to working with the products and follow the precautionary statements.
- SDSs can be obtained by contacting your local GCP representative or office.

## Storage & Shelf Life

- Store in original packaging between  $15^{\circ}$  and  $25^{\circ}\text{C}$ , under cover and protected from all sources of heat, ignition, moisture, frost and direct sunlight.
- Shelf life is twelve (12) months from date of manufacture when stored at these conditions in original, unopened packaging.

## Limitations of Use

- WATER-BAR XR-2010 is not suitable for use in movement joints or joints having a maximum joint width greater than  $1.0\text{mm}$
- Waterstops must be installed at every construction joint / cold joint, forming a continuous waterstop network
- For good design practice, not recommended as the sole waterproofing solution for joints
- Not to be installed to wet concrete surfaces with freestanding water. May be installed to dry or slightly damp concrete
- Exposure of installed product to prolonged rain may cause premature swelling. Concrete must not be poured to expanded or partially expanded waterstop. Where early exposure to water is possible, coat the installed WATER-BAR XR-2010 with GCP Delay Coating to delay waterstop swelling, or halt installation until conditions are more favourable
- WATER-BAR XR-2010 is recommended for use only in freshwater contact areas. When exposed to salt water, brackish water, chlorinated water or contaminated water, WATER-BAR XR-2010 will show limited expansion only
- For exposure to salt water, brackish water or chlorinated water, WATER-BAR XR-2010SW should be installed. For contaminated water exposure, please provide GCP with geotechnical site report and ground water / soil analysis reports to determine waterstop suitability
- Minimum 75mm concrete cover must be maintained to waterstops at all times

- Hydrophilic waterstops must not be used in block work construction or concrete filled permanent formwork walling systems
- Information in this document does not cover all possible application scenarios, limitations, or imply product suitability for an application. Please contact your local GCP representative for further information and to discuss your requirements prior to proceeding with installation
- This PDS does not constitute a GCP Product Specification, Work Method Statement or Scope of Works. Please contact your local GCP representative for project specific installation information

## System Components

PRODUCT	DESCRIPTION	PACKAGE SIZE
WATER-BAR™ XR-2010	Preformed 20mm x 10mm section, hydrophilic waterstop	10 lineal metre roll
SWELLSEAL® Mastic WA	1-part, hydrophilic polyurethane mastic	600ml sausage

## Estimating

Please contact your local GCP representative for information specific to your project estimating needs.

General Guidance:

PRODUCT	MAXIMUM COVERAGE PER LINEAL METRE
WATER-BAR™ XR-2010	1 lineal metre / lineal metre of joint + 100mm laps between rolls
SWELLSEAL® Mastic WA	10mm bead to rough concrete – 6 lineal metres / 600ml sausage

## Suitable Substrates

WATER-BAR XR-2010 may be applied only to:

- Structural reinforced concrete slabs, walls, footings, piles, pile caps, capping beams and similar concrete areas having concrete compressive strength greater than  $\geq 25$  MPa
- High strength pipe and conduits composed of corrosion resistant metals, PVC, HDPE, reinforced concrete and fibre reinforced plastics, passing through structural concrete

## Substrate Quality

Substrates must be structurally sound, clean and dry to slightly damp.

## Reinforced Concrete

- Well compacted, moisture cured as required by AS 3600
- Minimum concrete age = 14-28 days, dependent on concrete thickness, moisture content and primer
- Compressive strength - minimum strength grade 25 MPa to prevent concrete damage by swelling waterstop

## Metals

- Free of corrosion, gaps, holes and defects

## Plastics

- Clean, dry and free of contaminants

## Substrate Preparation

### Concrete, Masonry, Screeds and Renders

- Remove all dirt, dust, standing water and contaminants

### Metals

- Remove all dirt, dust, contaminants, water and corrosion

### Plastics

- Remove all dirt, dust, contaminants and water

## Priming

General

Not required.

## Waterstop Application

General

Ensure the following parameters are met before and during membrane application and cure:

PARAMETER	LIMITS
Substrate Temperature	+5 °C to +35 °C
Ambient Temperature	+5 °C to +35 °C
Relative Humidity	25% to 95%
Dew Point	Minimum 3 °C below substrate temperature
Condition	Clean, dry and free from condensation, contaminants, debris etc.

## Application Equipment

Generally, corrosion resistant concrete nails with flat heads or washers fitted and suitable nail gun.

## Application to Smooth Concrete Surfaces

- Unroll the waterstop and mechanically fix centrally in the width of the next concrete pour, maintaining a minimum 75mm concrete cover
- Mechanically fix through the waterstop and into solid concrete using corrosion resistant, flat head concrete nails, or fix with concrete nails and 10mm OD washers
- Mechanically fix at maximum 300mm centres ensuring waterstop lies flat on the substrate. Reduce fixing centres to 200mm or 100mm at direction changes
- Where joining successive rolls or joining to other runs of installed waterstop, products must be side-by-side lapped 100mm
- Once fixed, waterstop must be resistant to displacement by other trades, concrete pour or concrete vibration processes
- Concrete placement may commence immediately after waterstop is correctly fixed
- Placed concrete must be well compacted around WATER-BAR XR-2010 without any voids or honeycombs

## Application to Rough / Scabbled Concrete Surfaces

- Waterstop should be located centrally in the width of the next concrete pour, while maintaining a minimum 75mm concrete cover
- Gun a bead of SWELLSEAL Mastic WA hydrophilic mastic to the concrete at this location. Mastic bead must be large enough to fill level all depressions in the rough concrete surface. Typically, a 10mm diameter bead is required
- Unroll the waterstop and lay firmly into the uncured mastic.
- Mechanically fix through the waterstop, mastic and into solid concrete using corrosion resistant, flat head concrete nails, or fix with concrete nails and 10mm OD washers
- Mechanically fix at maximum 300mm centres ensuring waterstop lies flat on the substrate. Reduce fixing centres to 200mm or 100mm at direction changes
- Once fixed, mastic should be visible filling all depressions under the waterstop and have extruded out from both sides of the waterstop profile
- Once fixed, waterstop must be resistant to displacement by other trades, concrete pour or concrete vibration processes
- Concrete placement may commence immediately after waterstop is correctly fixed and before SWELLSEAL Mastic WA has cured firm
- Placed concrete must be well compacted around WATER-BAR XR-2010 without any voids or honeycombs

## Application to Pipes and other Penetrations

- Waterstop should be located around the pipe penetration centrally in the concrete thickness
- Wrap the waterstop around the pipe, ensuring ends overlap each other by 100mm
- Fix the waterstop to the pipe using steel or stainless steel tie wire wrapped over the waterstop. Twist wire end firmly to secure
- Alternatively, substitute the WATER-BAR XR-2010 with a continuous 10mm x 10mm bead of SWELLSEAL Mastic WA applied directly to the clean pipe. Allow SWELLSEAL Mastic WA to cure firm a minimum 24 hours before placing concrete
- Placed concrete must be well compacted around WATER-BAR XR-2010 (or SWELLSEAL Mastic WA) without any voids or honeycombs

## Clean-up

Not generally required for WATER-BAR XR-2010.

## Protection and Surfacing

Not generally required for WATER-BAR XR-2010.

## Maintenance

Not generally required for WATER-BAR XR-2010.

## Product Warranties

- GCP and contractors recognised by GCP as experienced in the application of GCP products will provide warranties for qualified individual projects
- Warranty periods offered and GCP installation requirements are dependent on project details and complexity. Contact your local GCP representative for further details

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