Supercast PVC Waterstop Range

constructive solutions

Centrally and externally placed PVC waterstops

Uses

The Supercast range of PVC waterstops is designed to provide an integral sealing system for movement and construction joints in concrete cast in-situ. These joints typically occur in the following types of structure:

Water retaining

- Reservoirs, water towers and sewage tanks.
- Dams, culverts, canals and spillways.
- Swimming pools.
- Bundled areas surrounding liquid retaining tanks.

Water excluding

- Basements and underground car parks.
- Tunnels and subways.
- Abutments and retaining walls.
- Roof decks and podium areas.

Advantages

- Range of profiles to suit every need.
- Fully continuous 4 bulbed network.
- Reinforced eyeleted edge flanges for positive fixing.
- Simple on-site jointing.
- Full range of moulded and fabricated intersection pieces.
- WRC approval for use in contact with potable water.

The range consists of centrally placed profiles; Supercast Hydrofoil, Supercast Watafoil, Supercast XHD Hydrofoil and Supercast XHD Watafoil; and externally placed profiles; Supercast Rearguard S, Supercast Rearguard R, Supercast Rearguard Kicker and Supercast Angleguard.

Standards compliance

Supercast PVC waterstops are suitable for use in contact with potable water. “Water Byelaws Scheme approved product”: listing number 8804054.

Description

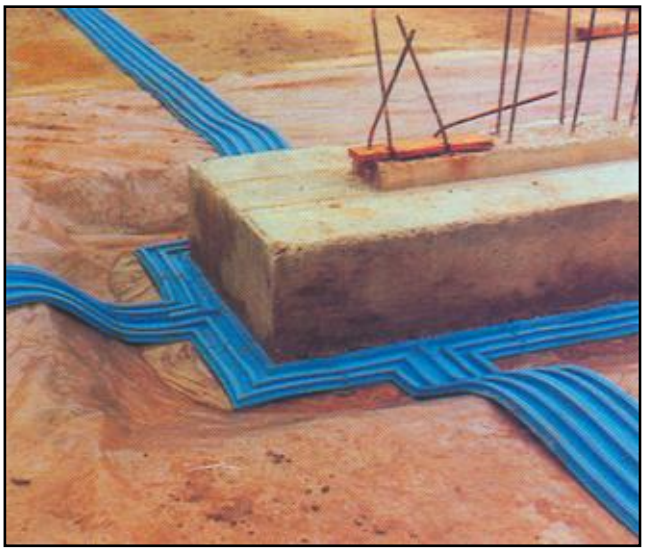
Supercast waterstops are extruded from a high grade PVC compound which has been formulated to give excellent flexibility and longevity characteristics. They are available as straight lengths and factory produced intersections or as a factory prefabricated segment of a network to minimize site jointing.

Principles of waterstop function

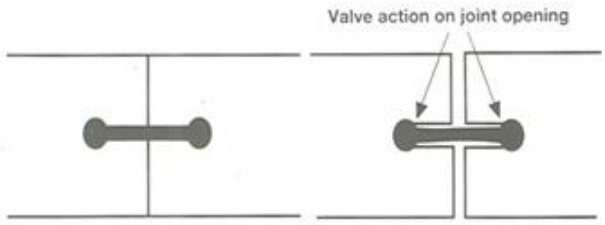
Supercast waterstops work because of two specific aspects of their design.

a) Valve principle

Simple waterstop profiles based on dumbells are cast into the edges of adjacent concrete panels, which act as baffles. In the event of joints opening as drying shrinkage or other movement occurs, the edge bulbs of the profile act as anchors. These induce tensions across the waterstop resulting in a sealing effect at the inner faces of the edge bulbs.

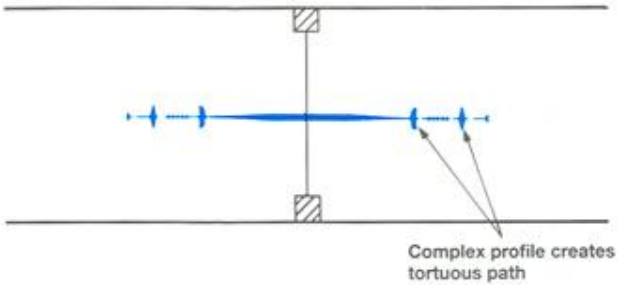


Supercast PVC Waterstop Range

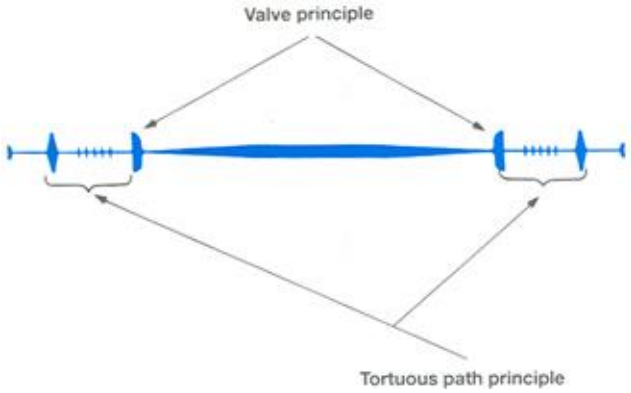


b) Tortuous path principle

Profiles with a more complex cross section have a much greater surface area. They present a much greater resistance and more difficult path for water to seep around the section.



The Supercast range incorporates both of these principles. The products offer a fully continuous 4 bulbed design maintaining both the valve and tortuous path principles. These principles are maintained in the transition from Rearguard profiles in floors to centrally placed profiles in walls.

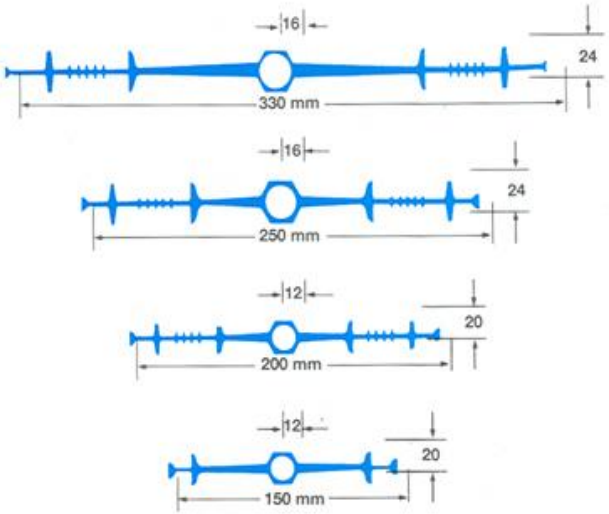


Supercast Hydrofoil section

Centre bulb sections are used in expansion, contraction and construction joints. The centre bulb allows for movements in a structure to be accommodated whilst its hexagonal deign provides a flat surface. This allows shuttering and joint fillers to fit snugly.

The 330 mm profile is specially designed for use in roof slabs where a greater degree of movement may occur particularly during construction.

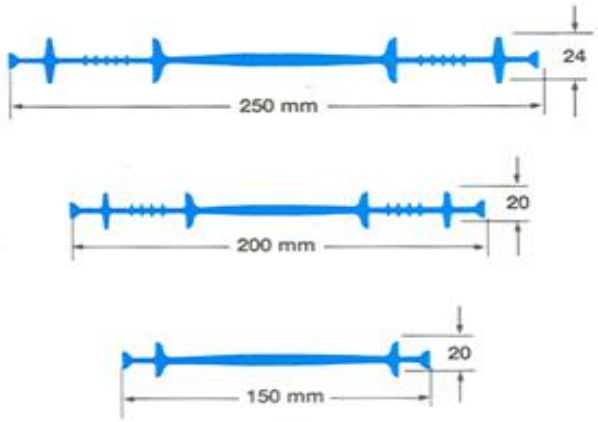
Hydrofoil sections



Supercast Watafoil sections

Plain web sections are used in construction and contraction joints.

Watafoil sections



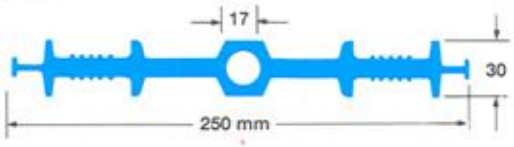
All centrally placed Supercast waterstops incorporate an eyeletted, reinforced edge flange. This enables them to be easily positioned by wiring to surrounding reinforcement.

Heavy duty sections

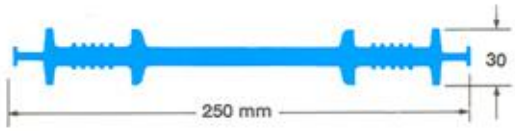
Increased web thickness gives a much stiffer section. The stiffened profile is used where large volumes of concrete are being placed. They are used where concrete is being placed from a great height such as deep wall shutters.

Supercast PVC Waterstop Range

XHD Hydrofoil



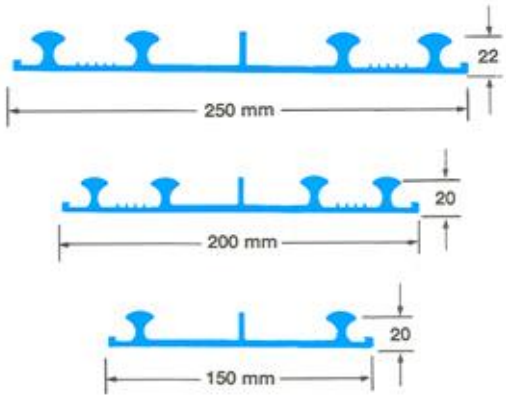
XHD Watafoil



Dimensions are approximate and subject to manufacturing tolerances

Supercast Rearguard R

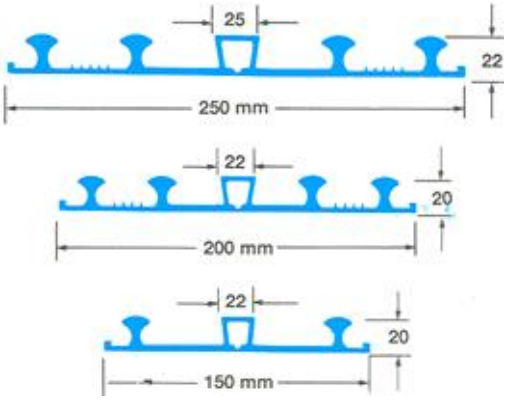
Plain web sections, which are placed externally, for use in contraction and construction joints. They incorporate a central fin to assist setting out shutter location.



Dimensions are approximate and subject to manufacturing tolerances

Supercast Rearguard S

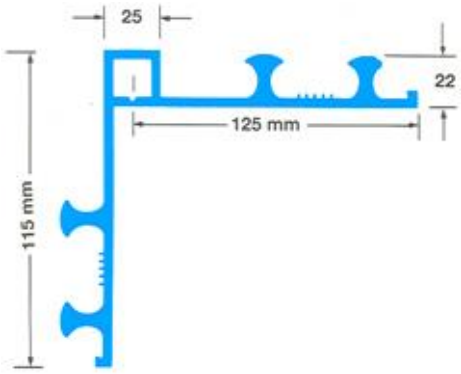
Sections incorporate a flat top center box, which allows movement to be accommodated in expansion joints. The box also provides a seating to support joint fillers.



All Rearguard sections incorporate a nailing flange with a reinforced edge to provide a secure fixing that will resist tearing.

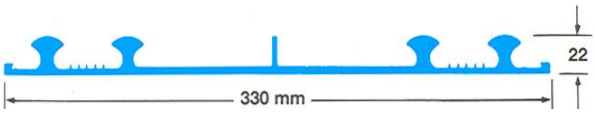
Supercast Angleguard

An externally placed waterstop for use where the joint line coincides with a change in level of the slab soffit. The profile is designed to co-ordinate with the 250 mm Rearguard S profile.



Supercast Rearguard Kicker

An extra wide version of Rearguard R profile which is used to seal wall/kicker joints where the concrete kicker is being cast after the slab rather than monolithically with the slab. The extra width enables the waterstop to span both the joint between kicker and slab as well as the joint between kicker and wall.



Technical support

Fosroc offers a comprehensive range of high performance high quality, construction products all backed by BS 5750 certification. Fosroc offers a technical support package to specifiers and contractors which include computer-aided design (CAD), standard details and technical advice from staff with unrivalled experience in the industry.

Design criteria

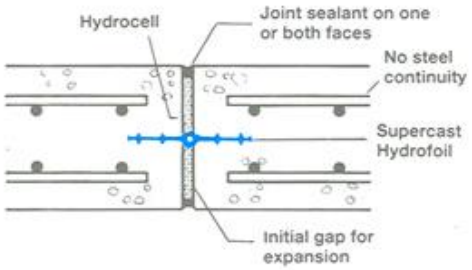
The choice of the width and thickness of waterstop is largely governed by concrete thickness, the position of the reinforcement, aggregate size and complexity of the pour.

In general the 250 mm width of waterstop is suited to wall thicknesses of 250 mm and over. For concrete less than 250 mm thick, the use of a narrower waterstop approximating to the wall thickness will be appropriate.

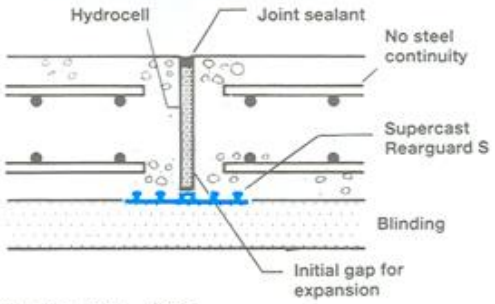
Supercast PVC Waterstop Range

Examples of movement/construction joints
Water retaining structures

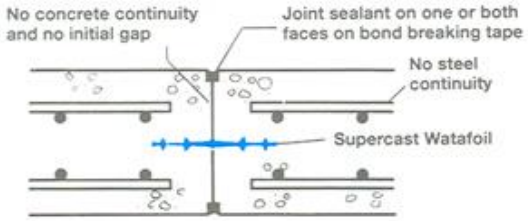
Expansion joint – wall



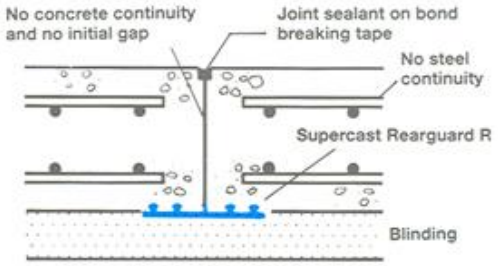
Expansion joint – floor



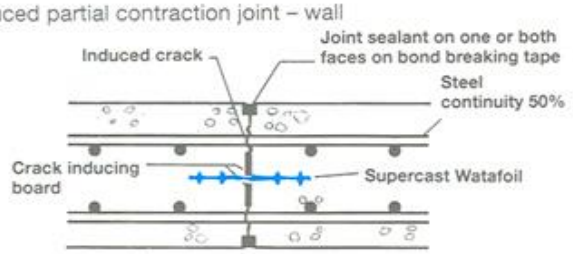
Formed contraction joint – wall



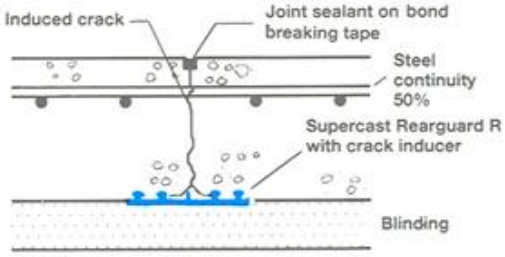
Formed contraction joint – floor



Induced partial contraction joint – wall



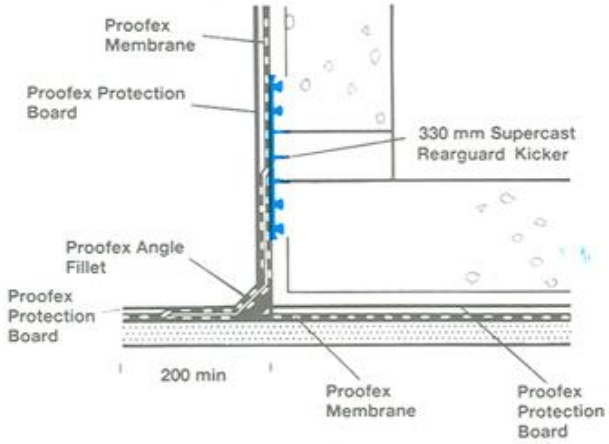
Induced partial contraction joint – floor

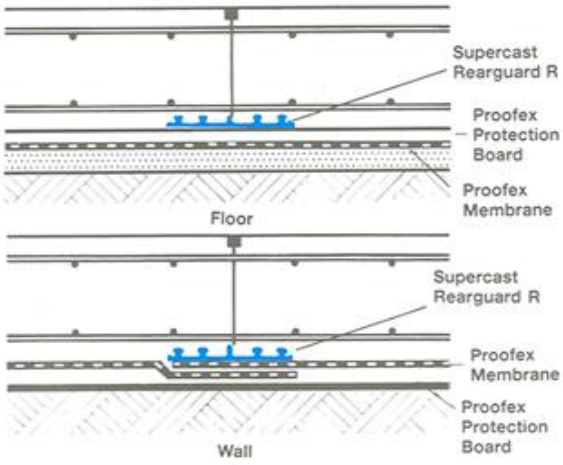


Note: Details based on BS 8007:1987 - Design of concrete structures for retaining aqueous liquids

Water excluding structures

Junctions of walls and ground slabs





Note: Details based on BS 8102:1990 - Protection of structures from water from the ground

Supercast PVC Waterstop Range

Centrally placed waterstop

These waterstops are positioned within the thickness of the concrete components and as a result are supported by concrete on both sides. They are therefore able to withstand water pressure from either side. This makes them suitable for use in water retaining structures. They will prevent loss of water from within the tank and will prevent ingress of ground water when the tank is drained down.

Externally placed waterstop

These waterstops are designed for use in basement, foundation and floor slab construction in vertical and horizontal joints in both water retaining and water excluding structures.

When used in walls, externally placed waterstops will only resist water pressure from the face to which they are fixed. When used below floor slabs, where the waterstop is supported by the blinding concrete or when placed in vertical situations against permanent concrete shuttering, externally placed waterstops will resist water pressure from either face.

Properties Profiles

Profiles

Form:	Extruded thermoplastic sections
Colour:	Blue
Hydrostatic head:	Up to 100 m (10 bar)
Joint movement:	Up to 10 mm

Compound

Typical figures:	To BS 2782 at 25^{o}C
Tensile strength:	Minimum 14 N/mm^{2}
Elongation at break:	Minimum 300%
Hardness:	Shore 'A' 80 to 90

Specification clauses

1. **Supplier specification**

   Where indicated on the drawings, PVC waterstops shall be Supercast Waterstops obtained from Fosroc (address as shown). All wall/floor waterstop connections shall be made using Supercast injection moulded transition pieces to ensure continuity of the four bulb profiles.

2. **Performance specification**

   Where indicated on the drawings, PVC waterstops shall be made from extruded plasticised PVC compound. The compound used shall meet the US Corps of Engineers specification CRD-C 572-74. it shall have a tensile strength in excess of 14 MN/m2 and an elongation at break in excess of 300%.

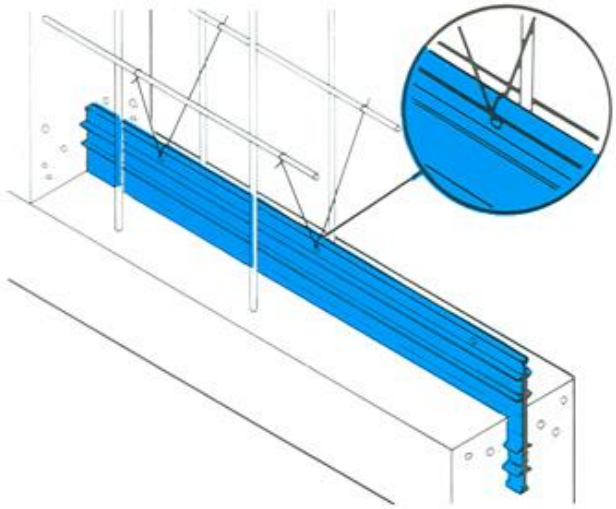
Installation instructions

Supercast Hydrofoil and Watafoil

Waterstops must be installed so that they are securely held in their correct position while the concrete is being placed. Concrete must be fully compacted around the waterstops to ensure that no voids or porous areas remain. Where reinforcement is present, an adequate clearance must be left to permit proper compaction.

The brass eyelets used for securing the waterstop are located outside the edge bulbs so as not to create water paths around the profile.

Example of a kicker joint

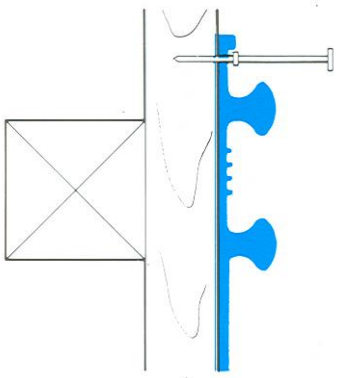


Supercast Rearguard

When used on ground slabs where the waterstop is supported on blinding, Rearguard profiles usually require no fixing. Lay the waterstop centrally over the line of the joint to be formed.

Fixing to vertical shuttering is done by nailing through the outer nailing flanges leaving the head of the nail proud so that it is held in the cured concrete. This prevents the waterstop being displaced when the shuttering is struck.

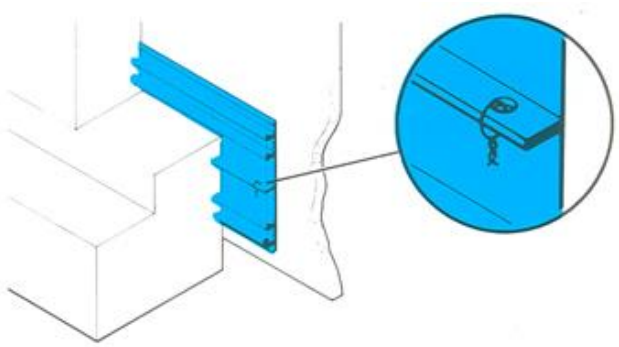
Fixing to vertical shutter



Supercast PVC Waterstop Range

Fixing Supercast Kicker Waterstop

In addition to nailing to the external shutter, the Kicker profile is equipped with brass eyelets in the central rib. Twist short lengths of tying wire through these eyelets so that when the kicker is cast they act as anchors, holding the center of the waterstop tight against the face of the concrete. This prevents the build-up of debris between the waterstop and the kicker prior to the wall being poured.



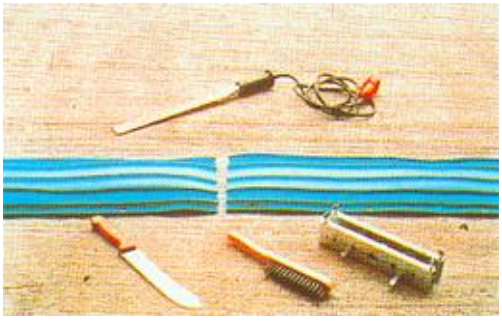
Supercast Angleguard

Fixing in position is done in a similar manner to Supercast Rearguard.

Site jointing instructions

Jointing of Supercast waterstops is carried out using Fosroc Heat Welding Equipment. The ends to be joined are cut square and held in alignment in a special jig. The ends are then pressed either side of a special heated blade, until an even, molten bead of PVC appears around the section. The heated blade is then removed and the molten ends pressed fully together. The PVC cools to form a strong fusion welded joint. Full instructions are available from Fosroc.

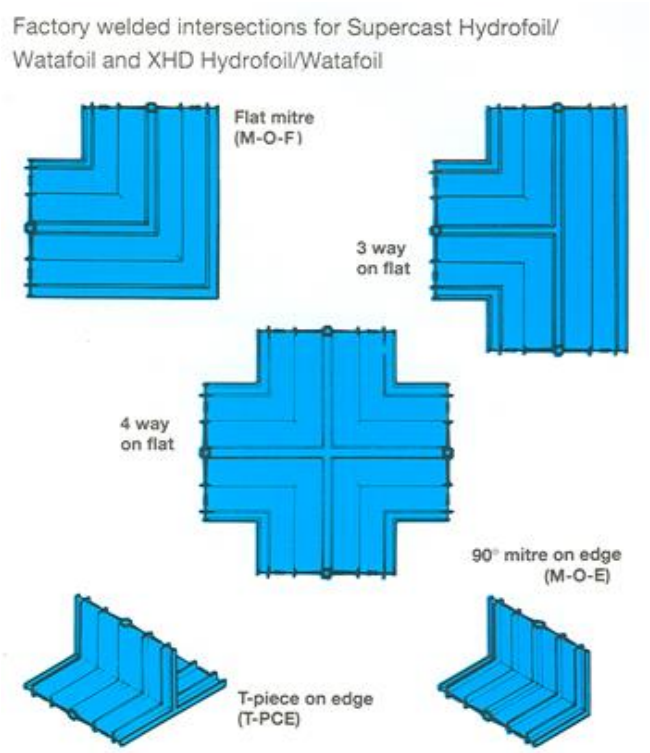
Fosroc PVC heat welding equipment

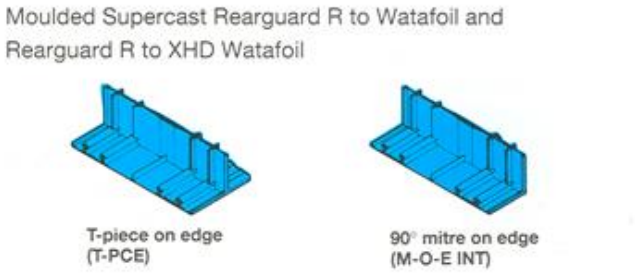


Intersection pieces

Standard intersection pieces are available for each Supercast waterstop profile. The standard on-flat intersection leg length is 230 mm from centre line. On-edge intersections have a standard 75 mm leg length.

Factory welded intersections for Supercast Hydrofoil / Watafoil ad XHD Hydrofoil / Watafoil.



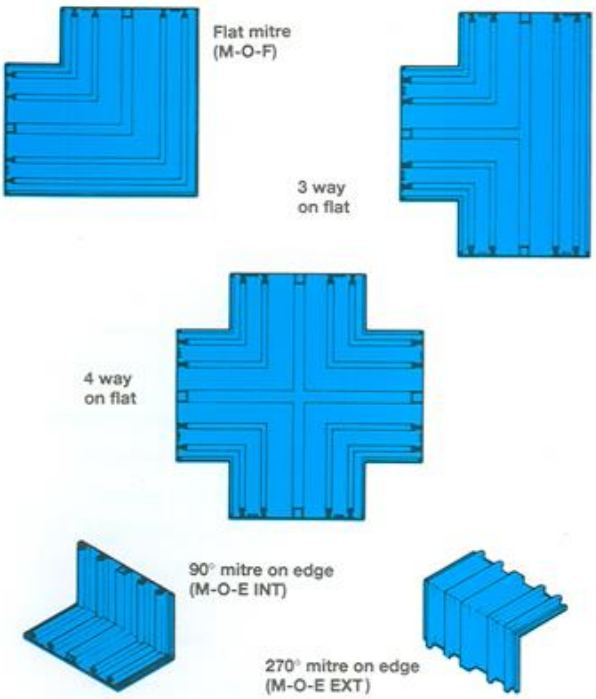


Supercast PVC Waterstop Range

Estimating

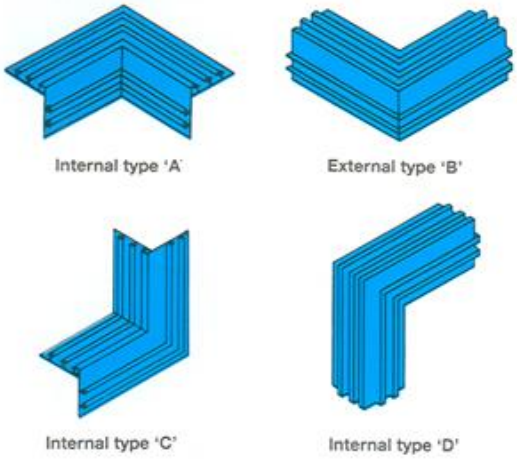
Supercast	Section Width in (mm)	Minimum radii On flat (m)	Minimum radii On edge (m)	Roll Length (m)
Hydrofoil	330	20	0.15	12
	250	15	0.15	12
	200	14	0.15	15
	150	12	0.075	15
Watafoil	250	15	0.15	12
	200	14	0.15	15
	150	12	0.075	20
Rearguard R	250	10	N/A	12
	200	9	N/A	15
	150	8	N/A	12 & 20
Rearguard S	250	10	N/A	12
	200	9	N/A	12
	150	8	N/A	12
Rearguard Kicker	300	20	N/A	12
Angleguard	250 girth	10	N/A	3 m lengths
XHD Hydrofoil	250	15	0.23	10
XHD Watafoil	250	15	0.23	10

Factory welded intersections for Supercast Rearguard R and S and Kicker 330 mm

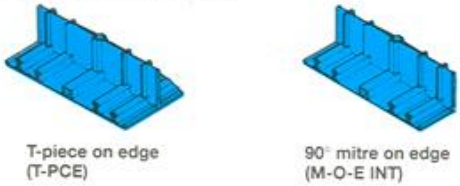


Factory welded intersections are available for Supercast Angleguard

Standard leg length is 300 mm



Moulded Supercast Rearguard S to Hydrofoil and Rearguard S to XHD Hydrofoil



Equipment

Jointing jigs

150 mm Supercast Rearguard R & S

200 mm Supercast Rearguard R & S

250 mm Supercast Rearguard R & S

330 mm Supercast Rearguard Kicker

150 mm Supercast Hydrofoil & Watafoil

200 mm Supercast Hydrofoil & Watafoil

250 mm Supercast Hydrofoil & Watafoil

250 mm Supercast XHD Hydrofoil & Watafoil

330 mm Supercast Hydrofoil

Heater blades

110v and 220v, 350w blades are available.

Warning: Ensure that heater blades are earthed by the green/yellow wire.

Precautions

Health and safety

Hot weld site jointing of PVC waterstops results in the liberation of hydrogen chloride mist and vapour. The OEL (operational exposure limit) of 5 ppm can be exceeded in still air confined spaces, therefore forced ventilation must be provided or a suitable respirator used.

Supercast PVC Waterstop Range

Additional information

Application at low temperatures

Care in the handling and installation of Supercast PVC waterstops is necessary at low ambient temperatures. Such temperatures will also require special precautions to be taken with the placing and curing of concrete.

Fosroc manufactures a wide range of complementary products which include:

- Waterproofing membranes & waterstops
- Joint sealants & filler boards
- Cementitious & epoxy grouts
- Specialised flooring materials

Fosroc additionally offers a comprehensive package of products specifically designed for the repair and refurbishment of damaged concrete. Fosroc's 'Systematic Approach' to concrete repair features the following:

- Hand-placed repair mortars
- Spray grade repair mortars
- Fluid micro-concretes
- Chemically resistant epoxy mortars
- Anti-carbonation/anti-chloride protective coatings
- Chemical and abrasion resistant coatings

For further information on any of the above, please consult your local Fosroc office - as below.

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