PREMCRETE

HYDROPRUFE PVC-M

COMPARTMENTALISED PVC MEMBRANE WATERPROOF SYSTEM

TECHNICAL PRODUCT SYSTEM GUIDE

WATERPROOFING REDEFINED

Complex underground construction of basements and tunnel developments are typically exposed to wide ranging challenges; comprising high water tables, contaminated ground conditions and accommodation of inherent structural stresses associated with deep structures.

A single source waterproofing design is fundamental for the success of any development to ensure compatibility of products and integrity of warranty. With complex underground structures inevitably the design will require a combination of loose-laid and fully bonded waterproofing systems - therefore the detailing of such interfaces is critical.

Such developments command extended design life requirements (typically in excess of 100 years) therefore it is paramount that the selected systems will contribute to this requirement through enhanced and robust levels of protection.

HYDROPRUFE PVC-M Compartmentalised Waterproofing provides a robust waterproofing design combining a fully welded, impervious membrane with a maintainable injection sealing system.

By designing compartmentalised waterproofing strategies, this ensures that any ingress is controlled and contained within an isolated compartment, which can be remediated by the injection sealing back up system.

The robustness and integrity of Warranties for the PREMCRETE Waterproofing System provides clients with confidence in the most complex of underground environments.

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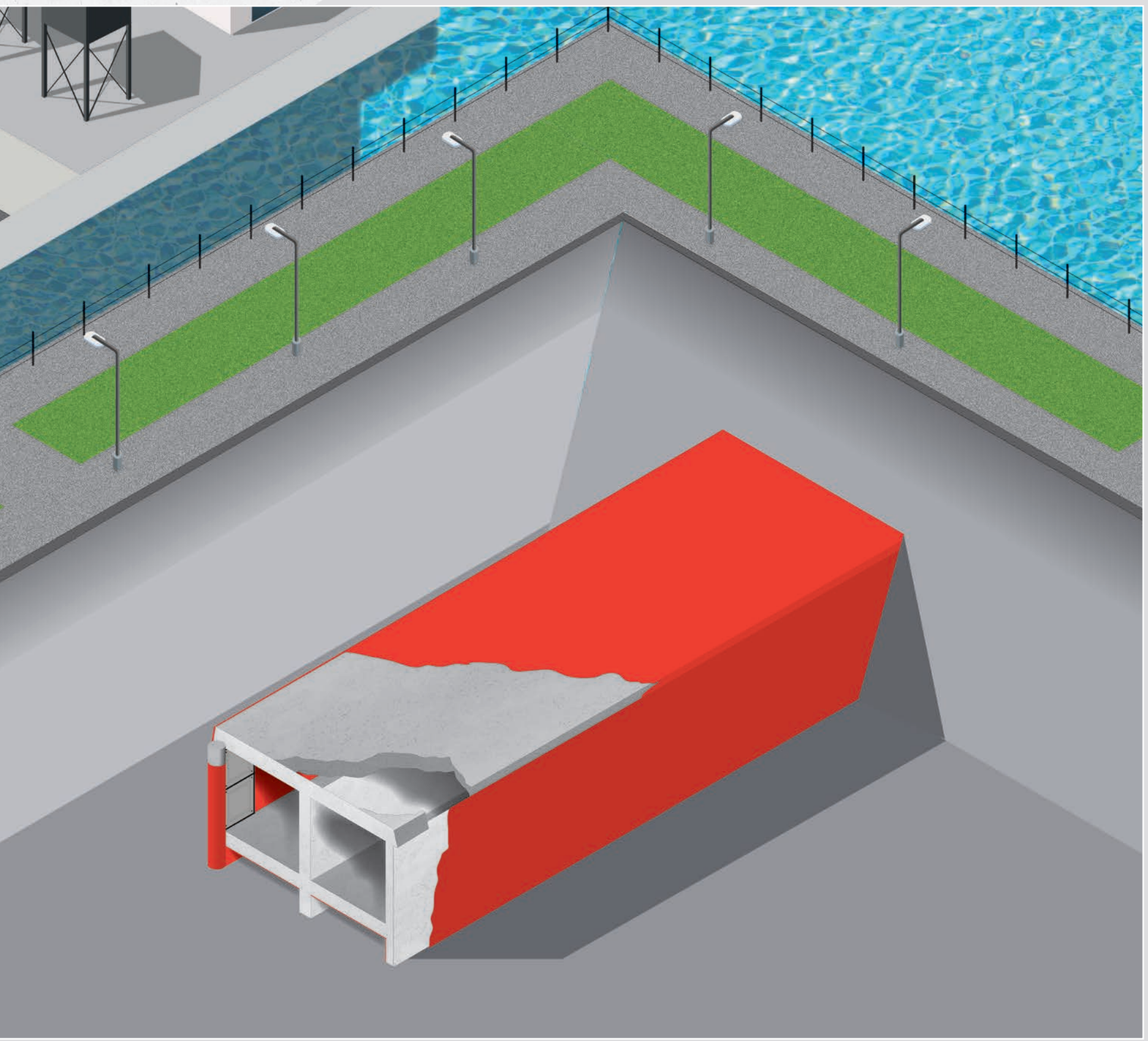
HYDROPRUFE PVC-M SYSTEM

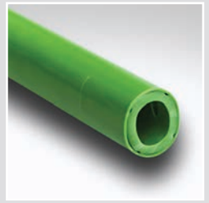


HYDROPRUFE PVC-M

HYDROPRUFE PVC-M is a highly flexible membrane and most suitable for tunnel waterproofing due to its excellent mechanical properties and durability in accordance with the expected lifetime of the structure.

HYDROBAR PVC WATERBAR

HYDROBAR is a range of high-performance PVC extruded waterstops designed to prevent the passage of water through construction and expansion joints in watertight structures. The HYDROBAR Waterstop range includes the REARSTOP and CENTRESTOP profiles and a number of pre-formed junction pieces and sections depending upon the application.

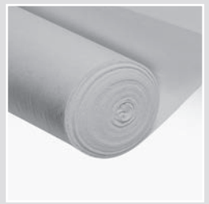


HYDROSTOP RI

HYDROSTOP RI is a PVC injection hose which is designed for application within the compartmenatlised zones of the HYDROPRUFE PVC-M. It is also used to seal construction joints in concrete where the integrity of the joint is sealed by post injection.

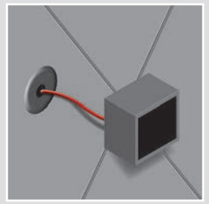
HYDROFLOW HM

HYDROFLOW HM is a high-performance HDPE, cuspated drainage and protection membrane incorporating a non-woven geotextile bonded to the outer face of the cuspates to produce a geocomposite drainage membrane. This is also designed to provide an effective drainage layer externally to water resisting structures.



HYDROPRUFE FP500

HYDROPRUFE FP500 is a polypropylene non-woven protection layer 500 g/m^2 and designed to protect the HYDROPRUFE PVC-M from puncture during the installation phase.



HYDROPRUFE INJECTION PORT

HYDROPRUFE Injection Port is a pre-formed PVC port designed to house the HYDROSTOP RI hoses to enable access for injection.

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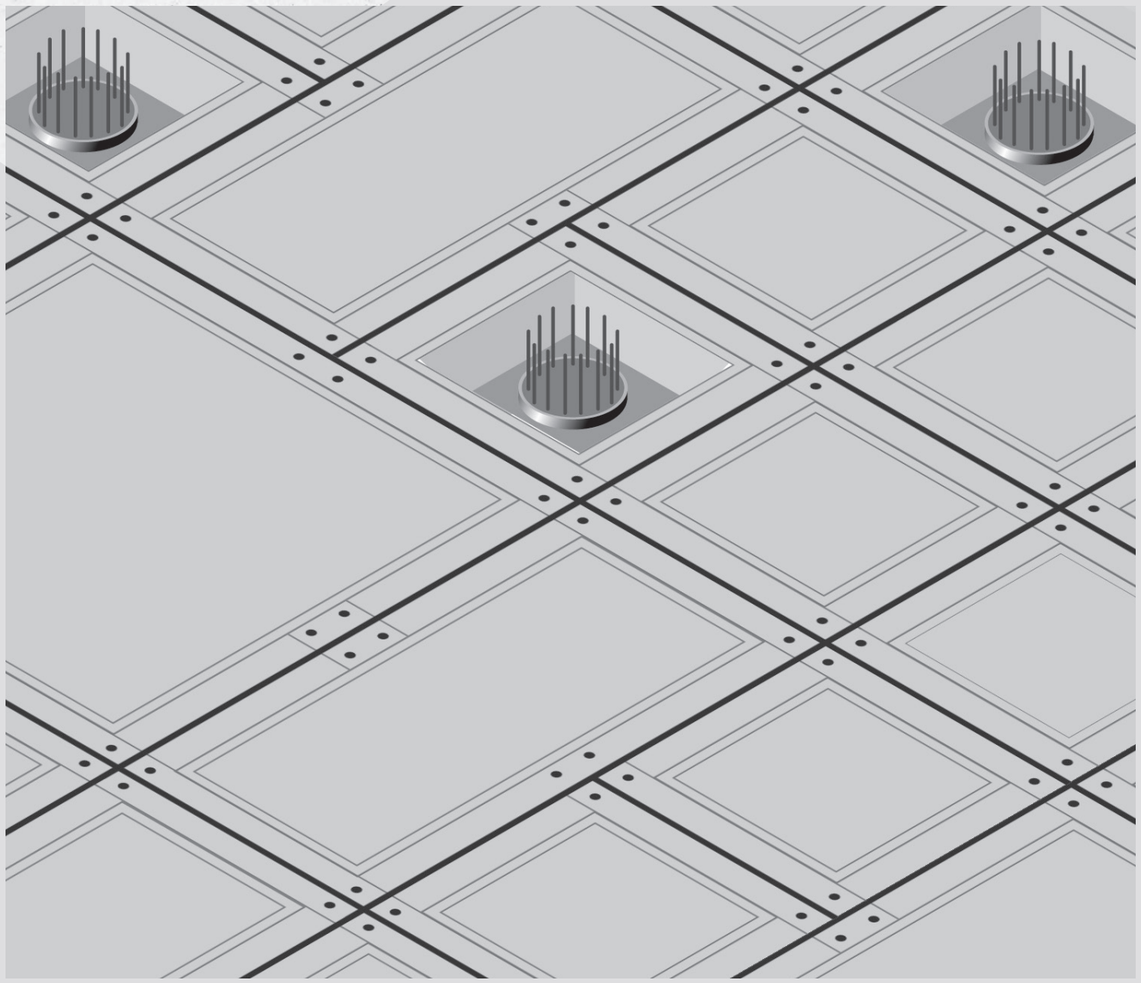
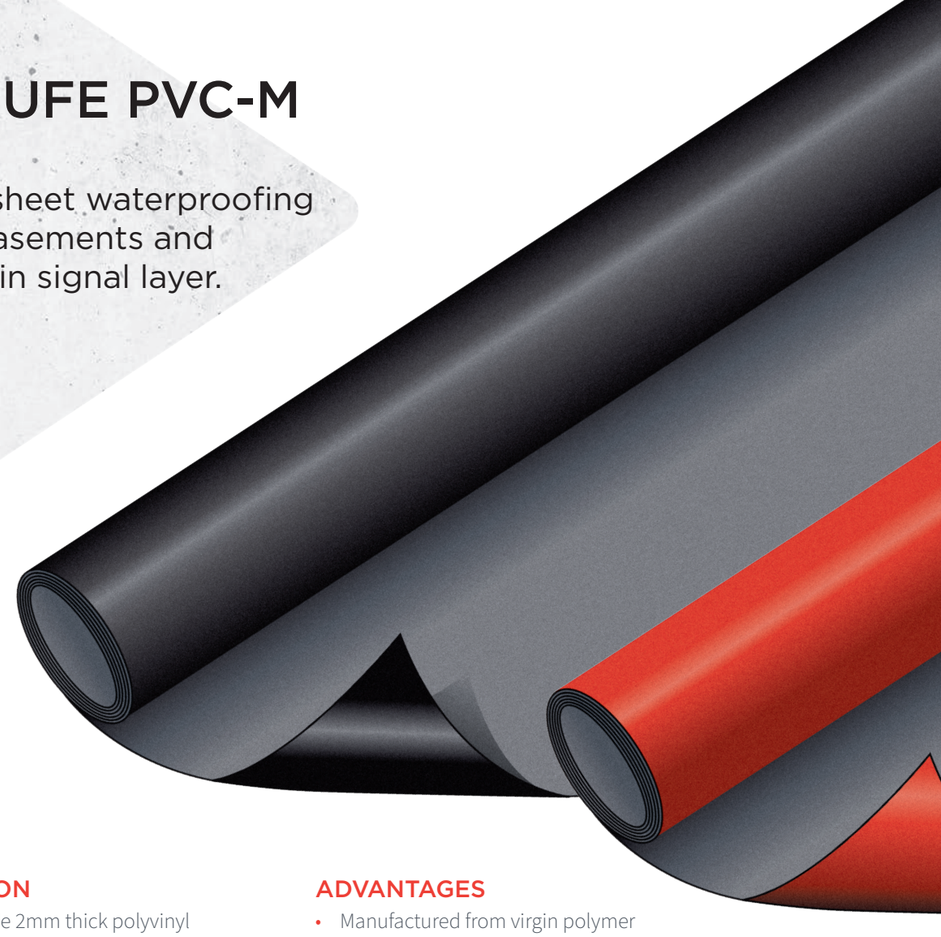
HYDROPRUFE PVC-M ADVANTAGES



KEY FEATURES	PROJECT ADVANTAGES
Compartmentalised System	Maintainable system to control water ingress for the lifetime of the structure, and ensure any defects are managed locally.
Optimal strength and flexibility	Ease of installation, weldability and detailing of complex joints.
Proven technology	Proven solution for tunneling and deep basement construction for many decades.
Excellent Chemical and Root Resistance	Confirming outstanding performance in challenging ground conditions.
Full Integrity Testing	Ensure complete management of quality control processes across all areas of installation.

HYDROPRUFE PVC-M

2mm thick PVC sheet waterproofing membrane for basements and tunnels with a thin signal layer.



PRODUCT DESCRIPTION

HYDROPRUFE PVC-M is a flexible 2mm thick polyvinyl chloride membrane which is available with a signal layer designed to assist with the integrity of the installed system. It is designed as the primary component of the Premcrete compartmentalised waterproofing system for deep basement and tunnel construction.

USES

HYDROPRUFE PVC-M is a loose-laid waterproof membrane which is easily installed to provide a continuous barrier to water to protect deep underground structures. It is particularly suitable where it is important to achieve a maintainable Type A Barrier Protection in accordance with BS 8102:2022 and meets the requirements of the Specification for tunnelling, 3rd edition BTS and ICE.

Typical uses are as follows:

- Deep basement structures
- Tunnels
- Culverts
- Civil engineering structures
- Reservoirs

ADVANTAGES

- Manufactured from virgin polymer
- Highly flexible and configurable
- Excellent resistance to aging
- Designed for heat welding using hot air gun or semi-automatic welding machine
- Root resistance to EN 14416
- High tensile strength
- Good resistance to aging
- High resistance to dynamic impact

DURABILITY

HYDROPRUFE PVC-M has a lifetime expectancy in line with the design life of the structure into which it is incorporated.

PACKAGING & COVERAGE

Pack Size: 2.15m x 25m roll

STORAGE & SHELF LIFE

HYDROPRUFE PVC-M should be kept in clean dry conditions at temperatures between 5^0C and 30^0C.

SPECIFICATIONS

PRODUCT INFORMATION		
Thickness	EN 1849-2	2mm
Tensile Strength	EN ISO 527	≥ 16 N/mm^2
Elongation	EN ISO 527	≥ 300%
Tear Resistance	DIN 53363	≥ 80 kN/m
	EN ISO 34-1	≥ 40 N/mm
Resistance to Impact	DIN 16726	>1100mm
Puncture Resistance	CBR EN 12236	>2.4 kN
Cold folding Resistance	EN 495-5	No cracks at -200C
Resistance to water pressure	DIN 16726	10 bar / 10hrs 6 bar / 72hrs
Root Resistance	EN 14416	Pass

Behaviour after storage in hot water (8 months/500C) SIA.V.280	
Mass Variation	≤ 4%
Variation of elongation at break	≤ 10%
Variation of tensile strength	10%
Folding at -20^{0}C	No Cracks

Behaviour after long-term aging (7 days/800C) DIN 16726	
General Appearance	No blisters
Dimensional Stability L&T	≤ 3%
Variation of elongation at break L&T	< ±20%
Variation of tensile strength L&T	< ±10%
Folding at -20^{0}C	No Cracks

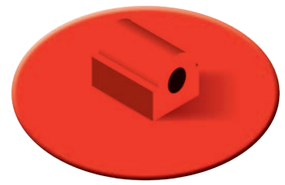
Behaviour after storage in hot water and alkaline solutions (90 days/230C) Methods A&B EN 14415	
Variation of elongation at break	< ±20%
Variation of tensile strength	< ±20%
Folding at -20^{0}C	No Cracks

Behaviour in Fire		
	B2 ON B 3800/1	B2
	SIA 280	IV.2
	DIN 4102	B2
	EN ISO 11925	Class E

SYSTEM COMPONENTS

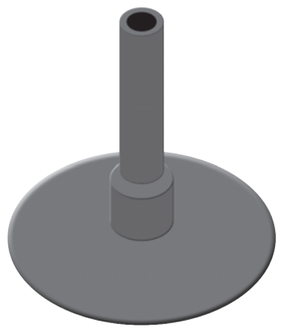
HYDROPRUFE PA Tape

Sealing tape for post application onto the Hydroprufe PVC-M, bonded with Eponite EP, epoxy adhesive. For use on termination details on vertical and horizontal areas where post-applied compartments are required.
Apply a 1mm thick layer of Eponite EP and firmly adhere the HYDROPRUFE PA Tape into the adhesive, before applying a second 1mm thick over coating.
Once the tape is fully cured onto the adhesive, the membranes can be heat welded onto the exposed HYDROPRUFE PA Tape.



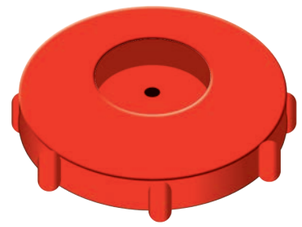
HYDROPRUFE Control Port

Control ports are designed to be spot or fully heat-welded onto the HYDROPRUFE PVC-M. The Control Ports are connected to accessible Injection Ports on the inside of the concrete.



HYDROPRUFE Injection Nipple

Injection nipples are used for connecting the Hydrostop RI hoses onto the face of the HYDROPRUFE PVC-M, which then connect centrally into the Control Port. This allows the system to be permanently maintainable.



HYDROPRUFE Fixing Disc

Fixing discs are designed to be shot-fired into shotcrete or existing vertical substrates through the HYDROPRUFE FP500. The fixing discs are compatible for heat welding with the HYDROPRUFE PVC-M.

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APPLICATION

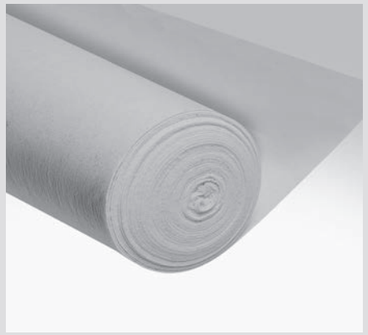
SURFACE PREPARATION:
The substrate should be well compacted hardcore or blinded with lean-mix concrete with surface free from excessive undulation or sharp projections which may puncture the membrane. Irregularities in the surface should be repaired with a suitable PREMCRETE repair mortar. If the membrane is to be installed to concrete foundation piles, then the piles should be back-blinded with a lean-mix concrete.

APPLICATION TO HORIZONTAL SURFACES:
HYDROPRUFE PVC-M should be installed onto a layer of HYDROPRUFE FP500 geotextile to provide a consistent substrate free from any protrusions that may affect the integrity of the membrane. The signal layer should be face-down whilst installing. Adjacent sheets should be lapped by 100mm sufficient to enable a 50mm wide weld.
Once the membrane has been installed then Hydrobar PVC should be welded to the membrane in the desired configuration to produce a fully compartmentalised system.
The HYDROPRUFE NIPPLE should be welded to the surface of the membrane and the HYDROSTOP RI to be installed within each zone and attached to a HYDROPRUFE CONTROL PORT and extended to the surface of the concrete to allow injection at a later date.

APPLICATION TO VERTICAL SURFACES:
If the membrane is to be fixed to an existing vertical surface (eg diaphragm wall) then HYDROPRUFE FP500 should be fixed to the substrate before attaching HYDROPRUFE FIXING DISC to the substrate using a suitable nail at 1m centres.
HYDROPRUFE PVC-M should then be welded to the fixing disc progressively as it is installed.
If HYDROPRUFE PVC-M is to be used in a cut-and-cover tunnel construction, then HYDROBAR PVC and HYDROSTOP RI should be fixed to the shutter in the correct configuration (compartments not exceeding 100 m^2). Once the shuttering has been struck then the HYDROPRUFE PVC-M should be progressively welded to the installed HYDROPRUFE PVC-M.

POST-APPLICATION TO ROOF STRUCTURES:
Concrete should be trowelled to a flat smooth surface.
To produce the compartmentalization HYDROPRUFE PA TAPE should then be bonded to the prepared concrete using Eponite EP adhesive in the designed configuration.
HYDROPRUFE PVC-M should then be installed and welded progressively to the HYDROPRUFE PA TAPE.
Typically, the roof structure will be protected using HYDROFLOW HM as a drainage system.

ANCILLARIES



HYDROPRUFE FP500
Protective Fleece for installation onto the substrate prior to the application of HYDROPRUFE PVC-M.

HYDROSTOP RI
HYDROSTOP RI is a PVC injection hose which is designed for application within the compartmenatlised zones of the Hydroprufe PVC-M. It is also used to seal construction joints in concrete, where the integrity of the joint is sealed by post injection.

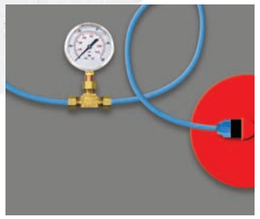
HYDROSTOP Waterstops
HYDROSTOP BR
HYDROSTOP WS10
HYDROSTOP WSM
HYDROSTOP Preformed Hydrophilic Rings
HYDROSTOP Pipe Strap

QUALITY CONTROL

Manual Checking

Manual checking with a hand-held probe to detect any unbonded joints.

Vacuum Testing



Applicable for use when the Active Triplex system is installed. Standard requirement is for the pressure to not drop less than 20% within 10 minutes to guarantee a watertight compartment.

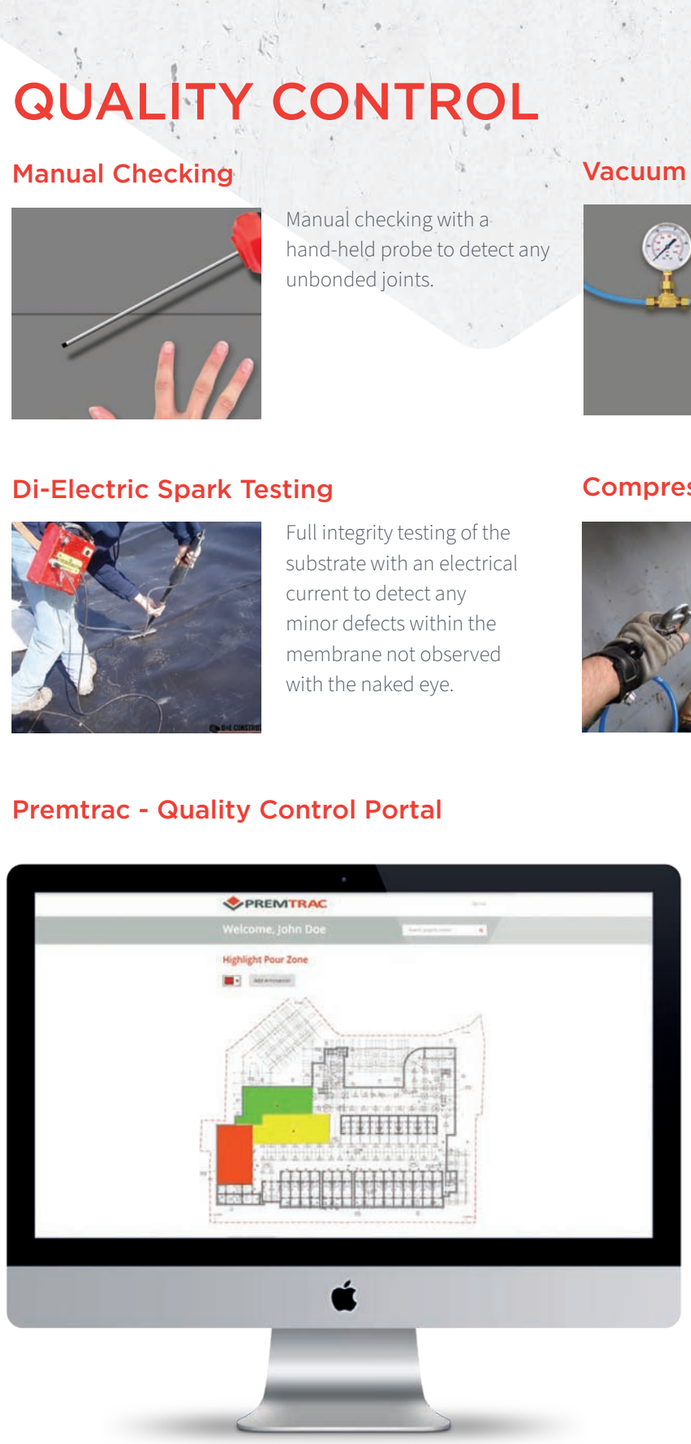
Di-Electric Spark Testing

Full integrity testing of the substrate with an electrical current to detect any minor defects within the membrane not observed with the naked eye.

Compressed Air

Compressed Air is typically only applicable for double-seam welding. Reverse flow valve and probe is inserted into a testing channel between the seams.

Premtrac - Quality Control Portal



The success of the installation of any waterproofing system is entirely dependent upon implementing and operating a robust quality contro regime, from design through to completion. Premtrac is an app based bespoke online tool - developed to manage quality on your project from the initial installation training session, through to the final project completion certification.

Unique plan mark-up facility to track and record critical information for every section of work completed.

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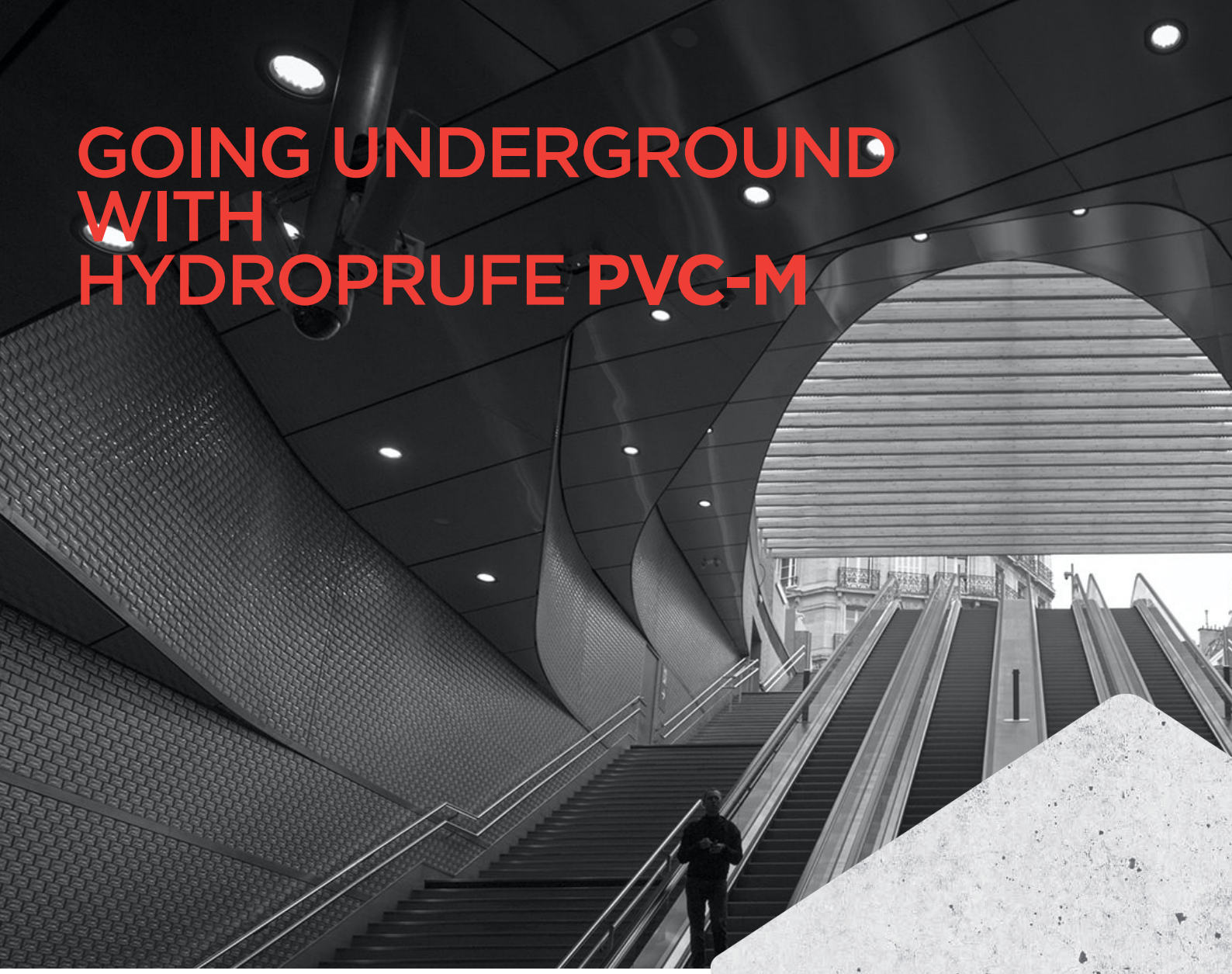
GOING UNDERGROUND WITH HYDROPRUFE PVC-M



PREMCRETE - STRUCTURED FOR PEACE OF MIND

Providing a robust waterproofing design strategy, supported by £10M professinal indemnity, ensures design responsibility is managed by a competent manufacturer.

By combining extensive experience, technical expertise and a diverse product range, we produce solutions for new and existing construction projects that require below-ground structural waterproofing and gas protection.

We manufacture epoxy and cementitious screeds, resin flooring systems, technical grouts, anchor resins, joint sealants and high-quality concrete repair systems.

Premcrete can offer combined waterproofing and gas protection systems using external:

Type A membranes

Type B Integral concrete

Type C cavity drain membranes.

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