COMBI-SEAL
GAS RESISTANT WATERPROOF MEMBRANE

TECHNICAL DATA

DESCRIPTION

COMBI-SEAL comprises of a high-density polyethylene membrane (HDPE) and non-woven self-healing, geotextile membrane to produce a durable, pre-applied membrane resisting Radon, hydrocarbons, VOCs, ground gases and water. The membrane utilizes PREMCRETE APAN™ technology to effectively resist water pressure, gases and VOC's from within the ground. The composite membrane will restrict gas vapour transmission to less than 40ml/day/m2 in accordance with BS8485:2015+A1:2019. COMBI-SEAL is a highly chemical resistant membrane which ensures that the integrity of the membrane is secure even in the presence of aggressive chemicals. The textured profile of the membrane ensures an integral bond to the structure to which it is applied.

USES

COMBI-SEAL is a pre-applied VOC resistant waterproof membrane for basement construction, lift pits, concrete retaining walls and other structures which extend below ground where resistance to hydrocarbons, ground gases and water is required. **COMBI-SEAL** may also be used to protect ground floor slabs, particularly where a good integral bond is required to the underside of the concrete slab or where a clay heave board has been installed. **COMBI-SEAL** achieves two points when correctly installed in accordance with Table 7 of BS 8485:2015+A1:2019.

COMPLIANCE

COMBI-SEAL is certified BDA and is UKCA Certified.

UK CA

ADVANTAGES

- Lightweight but robust membrane, provides an ease of handling on site.
- Unique APAN™ technology forms strong adhesion to concrete.
- Taped or welded joints.

PROCEDURE

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 prepared removing all loose soil and ensuring that the concrete is relatively flat. The surface should be prepared so that there are no voids which the membrane would have to span as this would render the active element of the membrane ineffective. The membrane must be fully encapsulated against a consistent surface for maximum performance.

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Application to vertical surfaces: COMBI-SEAL, when pre-applied, should be installed to the inside face of the shuttering to be subsequently filled with concrete. The sheets should be installed with the white active fleece in contact with the freshly placed concrete and aligned vertically ensuring that all lap joints face down away from the concrete pour. **COMBI-SEAL**, when post-applied, must be installed against a consistent substrate and continuous compaction achieved against the membrane. Lap joints should be sealed using the COMBI-SEAL TAPE or the selvedge strip should be used by folding back the white fleece before removing the release paper from the tape before positioning the adjacent sheet of membrane. The lap joint should be rolled with a seam roller before folding the fleece back into place, this will provide two-fold protection at the lap joint. The membrane should be fixed mechanically through the selvedge or other taped zones using PREMCRETE METAL WASHER FIXINGS at 500mm centres. This will ensure the integrity of the gas barrier remains intact. Once the concrete has been placed the shutter may be removed, and the **COMBI-SEAL** will remain adhered to the concrete. The membrane should be protected using PREMCRETE PROTECTION BOARD 600 prior to backfill to ensure the membrane remains un-punctured. **COMBI-SEAL** should not be installed above the final ground level.

Application to horizontal surfaces: COMBI-SEAL, when pre-applied, should be laid with the white fleece facing the installer and in direct contact with the concrete where an active bond is required. There may be applications where **COMBI-SEAL** can be installed without direct concrete contact, however such applications must ensure consistency of loading on the membrane. This application is not suitable for where ground heave is to be considered within the design. Adjoining sheets should be lapped by a minimum of 150mm and sealed using COMBISEAL TAPE or by making use of the selvedge (refer to above methodology). It is recommended to stagger the lap joints by 300mm to avoid 4 sheets lapping at one location. The membrane should be fixed mechanically through the selvedge or other taped zones using PREMCRETE METAL WASHER FIXINGS at 500mm centres. Typically, reinforcement spacer blocks should be placed along the length of the lap joint to ensure that the membrane is effectively loaded to prevent displacement during placement of the concrete. Service penetrations and pipes should be sealed using a HYDROPRUFE TOPHAT which is sealed to the underside of the **COMBI-SEAL** using HCR BUTYL TAPE. TWINSEAL COMPOUND GR should be applied around the circumference of the penetration to ensure the integrity of the joint. TWINSEAL COMPOUND GR may also be used to assist with the detailing of difficult junctions.

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Property	Test Method	Value
Weight	EN 1849-1	950 g/M2
Thickness (20 kPa)	EN 1849-1	3mm (0.5mm HDPE, 2.5mm Geotextile)
Maximum Tensile MD	EN ISO 12311-1	930 N/5cm
Maximum Tensile CD	EN ISO 12311-1	1456N/5cm
Elongation at break MD	EN ISO 12311-2	79%
Elongation at break CD	EN ISO 12311-2	83%
Tear Resistance MD (nail shank)	EN 12310-1	1010 N
Tear Resistance CD (nail shank)	EN 12310-1	1030 N
Water Tightness	EN 1928 B	PASS
Resistance to Impact	EN 12691	>450mm
Moisture/Vapour Transmission Rate	ISO 15106	0.134g/M_2/24Hr
Methane Permeability	ISO 15105-1	23ml/M_2/24Hr
Carbon Dioxide Permeability	ISO 15105-1	25ml/M_2/24Hr
Static Load Resistance	EN 12730 - B	20 Kg
Shear Resistance at Joints	EN 12317-2	402 N
Further independent test certificates are available upon request relating to VOC resistance.		

PACKAGING & COVERAGE

Pack Size: Roll size is 2m x 25m roll
Weight: 48kg
Pallet Quantity: 20 rolls

STORAGE & SHELF LIFE

Store in a cool, dry, frost-free conditions
The membrane should be protected against UV

HEALTH & SAFETY

See separate Material Safety Data Sheet

ANCILLARY PRODUCTS

- COMBI-SEAL TAPE 150mm x 45m
- METAL WASHER FIXINGS box of 100
- HCR BUTYL TAPE 30mm x 30m
- COMBI-SEAL JOINT STRIP 450mm x 20m
- COMBI-SEA LJOINT STRIP 150mm x 20m

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HOT WEATHER GUIDANCE

COMBI-SEAL comprises of a polyethylene membrane which is bonded to a fleece which incorporates the PREMCRETE APAN technology. It is known that some movement in the membrane will occur under rising temperatures, due to the characteristics of the MS Polymer technology used in its manufacture, which retains a degree of latent moisture. Our installation guidance of mechanically fixing the membrane is designed to mitigate this behaviour.

As per our installation guidance, the lap joints should be mechanically fastened to lock the adjacent sheets together. It is important to ensure that any mechanical fixings are made through the lap joint where the HCR Butyl Tape has been installed. Should fixings be required outside of the taped zone, then Twinseal Compound GR should be applied over the fixing to maintain the integrity of the gas membrane. If the membrane is laid to concrete blinding, then Premcrete Metal Washer fixings must be used to nail through the membrane into the blinding at 500mm centres. If the membrane is to be laid on clay heave board, then the membrane should be stapled at the lap joint using a Heavy-Duty Staple Gun. Fixings should be made at maximum of 200mm centres and reinforcement spacer blocks should be laid along the length of the lap joint to assist with holding the membrane in position.