

VOLTEX GB-500

HIGH PERFORMANCE GAS VAPOUR AND WATERPROOFING BARRIER FOR UNDERGROUND STRUCTURES

DESCRIPTION

VOLTEX GB-500 is a membrane composite comprised of a 500 micron thick, 7 layer engineered film consisting of polyethylene and a EVOH barrier layer with integrated bentonite geotextile waterproofing tanking membrane. Along the two roll edges the two layers are not integrally bonded for 150 mm to facilitate ease of welding or taping the PE/EVOH geomembrane overlap and then overlapping the geotextile layer component.

VOLTEX GB-500 is designed for use as a gas vapour waterproofing barrier to resist the ingress of radon, methane, carbon dioxide gases and water into buildings from landfill and naturally-occurring sources. VOLTEX GB-500 can be installed on sites with passive or active sub-slab ventilation measures; used in conjunction with GEOVENT ventilation composite and relevant vent connectors as applicable. VOLTEX GB-500 can be used in both non-hydrostatic and hydrostatic conditions. VOLTEX GB-500 fully complies with the latest codes of practice for gases and water as published by BRE, CIRIA and BSI (BS 8485:2015+A1:2019; BS8102: 2009), and is suitable for use as a gas and water protection system for NHBC AMBER 1 and AMBER 2 site characterisations.

APPLICATIONS

VOLTEX GB-500 is designed for use as a gas vapour resistant barrier to restrict the ingress of radon, methane, carbon dioxide gases and water into buildings from landfill and naturally-occurring sources. VOLTEX GB-500 can be installed on sites where passive or active ventilation measures are required; used in conjunction with GEOVENT ventilation composite and relevant vent connectors as applicable.

VOLTEX GB-500 can be used in both non-hydrostatic and hydrostatic conditions where protection against gases and water is required.

INSTALLATION

General: VOLTEX GB-500 and accessory products should be installed in accordance with the manufacturer's installation guidelines, and in accordance with local building requirements for gas vapour protection (i.e., BS 8485:2015+A1:2019 – Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings). Install: Apply VOLTEX GB-500 to the substrate with the geotextile side facing installer towards the concrete requiring gas / waterproofing protection, and the green PE/EVOH film side facing towards the substrate / backfill. VOLTEX GB-500 installation should be carried out by trained, competent personnel.

Preparatory Work: Under Slab: Substrate should be smooth, clean, even textured, free from voids and sharp protrusions. VOLTEX GB-500 should be installed over a sand blinding layer or concrete blinding with a smooth float finish. For well compacted ground or gravel substrates, install VOLTEX GB-500 over protection non-woven geotextile. The substrate should be dry and free from standing water or ice prior to installation. Vertical brickwork and blockwork surfaces must be dry and either rendered or flush pointed to provide a smooth surface without sudden changes in level.

Jointing and Sealing of Membrane Overlaps: Heat-Welded Overlap Installation – It is recommended that polyethylene (PE/EVOH) liner of VOLTEX GB-500 membrane overlaps, plus overlaps with accessory products are sealed by heat welding where possible. With the geotextile edge layers folded back, heat-weld PE/EVOH liner of VOLTEX GB-500 with roll sides and roll-ends overlapped a minimum 100 mm (Detail W-1). Welded overlaps with accessory products should also be minimum 100 mm. Heat-welding should be carried out by trained competent personnel with suitable qualifications in accordance with best practice, and guidance contained within BS 8485:2015+A1:2019. VOLTEX GB-500 membrane overlaps should be dry, clean, and flat without wrinkles or defects prior to heat-welding. Ensure that the air temperature does not fall below daily dew point temperature to prevent the risk of surface condensation forming on VOLTEX GB-500. Then fold back over and lap the geotextile layer edges of the membrane (Detail W-2).

Taped-Overlap Installation – Where VOLTEX GB-500 membrane overlaps plus overlaps with accessory products are to be sealed by taping, VOLTEX GB-500 roll-sides and roll-ends should be overlapped minimum 150 mm. Taped overlaps with accessory products should also be minimum 150 mm. VOLTEX GB-500 membrane overlaps should be dry, clean, and flat without wrinkles or defects prior to taping. Conduct all seam taping when ambient and surface temperature is +4 °C or above. Install continuous line of DS-80 tape centered within the 150mm overlap; install in longest practical lengths with butted DS-80 roll ends lapped minimum 50mm (Detail T-1). Using a silicone roller, press along the entire DS-80 tape line to bond the tape to both VOLTEX GB-500 films. With geotextile edge layers folded back, complete taping by installing SS80 tape centered over exposed top PE/EVOH liner lap edge of VOLTEX GB-500. Install SS80 tape continuously along all PE/EVOH liner overlaps with SS80 roll ends lapped minimum 50mm. Using silicone roller, press SS80 tape to PE/EVOH liner of VOLTEX GB-500. Then fold back over and lap the geotextile layer edges of the membrane (Detail T-2).

With both jointing procedures, the overlapping of PE/EVOH film to PE/EVOH film and geotextile to geotextile must be followed per the installation steps illustrated on Page 3. e.

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SIZE AND PACKAGING

Standard roll size 1.66 m x 10.0 m.

STORAGE

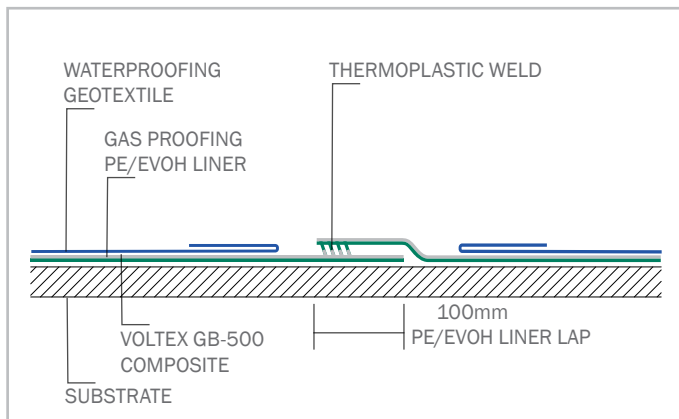
VOLTEX GB-500 rolls should be stored on stable/level ground and loaded not more than five rolls high, with no other material stacked on top. The rolls should be stored off the ground and protected from exposure to precipitation and prolonged direct sunlight.

| TECHNICAL DATA | | | |
|--------------------------------------------------------|---------------------------------|---------------------------------------------|------------------------------------------------------|
| CHARACTERISTIC | TEST METHOD | UNIT | VALUE |
| PHYSICAL PROPERTIES | | | |
| Thickness | EN 1849-2 | mm | 5 typical |
| Width | EN 1849-2 | m | 1.66 |
| Length | EN 1849-2 | m | 10 |
| Weight | EN 1849-2 | g/m ² | 3200 |
| HYDRAULIC PROPERTIES OF PE/EVOH 7 LAYERS LINER | | | |
| Water tightness after artificial ageing | EN 1296 (12 weeks); EN 1928 B | - | Tight |
| Water tightness against chemicals | EN 1847 (28 d/+23°C); EN 1928 B | - | Tight |
| MECHANICAL PROPERTIES OF PE/EVOH 7 LAYERS LINER | | | |
| Resistance to Static Load | EN 12730 | kg | 20 |
| Tensile Strength (MD) | EN 12311-1 | N/50mm | 550 |
| Tensile Strength (CMD) | EN 12311-1 | N/50mm | 400 |
| Tensile Elongation (MD) | EN 12311-2 | % | 500 |
| Tensile Elongation (CMD) | EN 12311-2 | % | 500 |
| Puncture Resistance | ASTM D 4833 | N | 170 |
| Resistance to tearing (nail shank) MD | EN 12310-1 | N | 300 |
| Resistance to tearing (nail shank) CMD | EN 12310-1 | N | 300 |
| GAS PERMEABILITY OF PE/EVOH 7 LAYERS LINER | | | |
| Methane Transmission Rate | EN ISO 15105-1 | ml/m ² x day x atm | ≤ 0.1 |
| Radon Diffusion Coefficient D | ISO/TS 11665-13 | m ² /s | 7.1 x 10 ⁻¹⁴ (+ 0.8 x 10 ⁻¹⁴) |
| Carbon Dioxide Transmission | EN ISO 15105-1 | ml/m ² x day x atm | < 1.0 |
| Water Vapour Transmission Rate | EN ISO 15105-3 | cm ³ /m ² x day x bar | ≤ 0.1 |
| MEMBRANE COMPOSITE | | | |
| Hydrostatic Pressure Resistance | ASTM D 5385 (mod) | m | 70 |
| Peel Adhesion to Concrete | ASTM D 903 (mod) | kN/m min | 2,6 |
| Tensile Strength (MD/CD) | EN ISO 10319 | kN/m | ≥ 13 |
| Puncture Resistance | EN ISO 12236 | kN | 2.5 |

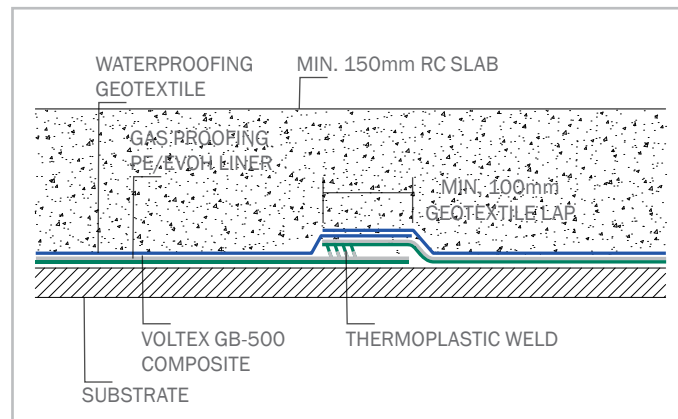
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HEAT WELDING OVERLAP INSTALLATION STEPS

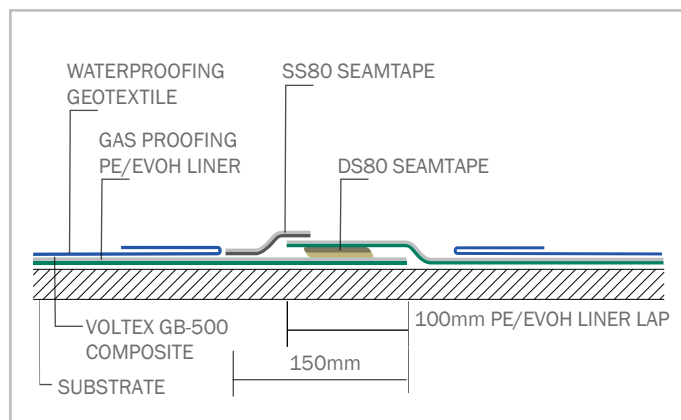


Detail W-1

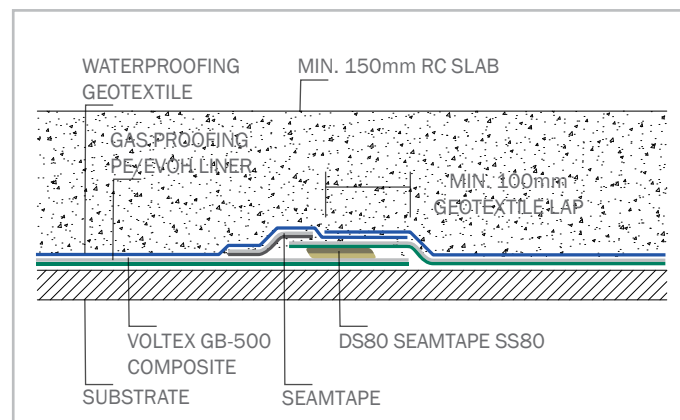


Detail W-2

TAPING OVERLAP INSTALLATION STEPS



Detail T-1



Detail T-2