

BluSeal VLDPE Tunnel Liner

VLDPE FLEXIBLE SHEET MEMBRANE

BluSeal VLDPE is supplied and installed as a fully sealed and welded, robust membrane system.

BluSeal VLDPE Tunnel Liner is a synthetic membrane of plasticised VLDPE sheet which forms a flexible and durable tunnel membrane. BluSeal VLDPE Tunnel Liner is used for lining bored and driven tunnels, cut and cover tunnels, cross passages, shafts and underground structures. BluSeal VLDPE Tunnel Liner comes in a range of thicknesses for various performance applications. The membrane is applied to structures to prevent water inflow and provide asset protection.

Application Advantages

- Flexibility to conform to various surface profiles
- High tear strength and elongation
- Exceptional waterproofing performance
- Good weldability

Lifecycle Advantages

- 100 year design life
- International Standards testing
- Fire rated

About the Product

BluSeal VLDPE is supplied and installed as a fully sealed and welded robust membrane system. The installed system includes proprietary system provisions for service penetrations, through fixings and terminations. The liner is suitable for a range of underground structures providing the most robust and reliable solution available for concrete protection and water infiltration management. Under the supervision of Bluey Engineers and trained installers, BluSeal VLDPE can be applied to tunnels, basements and other structures as either a tanked or drained lining system. VLDPE allows easy hand welding in complex areas providing cost savings on installation around structures with complex geometry. BluSeal VLDPE is designed and installed in accordance with International standards. BluSeal VLDPE is the most reliable choice for all civil engineering underground structures.

Application Solutions

- Lining bored and driven tunnels
- Cut and cover tunnels
- Green roofs
- Cross passages
- Underground structures
- Flat and insulated roof structures

Project Specification Clause

VLDPE FLEXIBLE SHEET MEMBRANE- The VLDPE Sheet membrane used for this project shall be supplied and installed as a fully sealed and welded robust membrane system. It shall be a pre-fabricated product that has independent testing to validate the performance outlined in the technical data table on the following pages. BluSeal VLDPE Tunnel Liner manufactured by Bluey Technologies or equivalent shall be accepted.

Project Examples

Tunnel waterproofing, basements, green roofs, rail bridges, land bridges.

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Application Specification

PREPARATION

- I.1 Substrate surfaces onto which a waterproof membrane is to be applied shall be prepared by the addition of a shotcrete smoothing layer to remove local peaks and infill hollows, or a suitably smooth concrete or rock surface.
- I.2 Surfaces on which waterproofing systems shall be installed shall be clean, free from loose aggregate, sharp protrusions, projecting tying wire, release agents and other substances which are likely to damage or affect the waterproofing system.
- I.3 Large circumferential irregularities shall not exceed 200mm when measured from a 1.0m curved edge held against the tunnel circumference.
- I.4 Any curvature or irregularity shall have a radius greater than 200mm. In areas where curvature is in excess of this value the Waterproofing Supervisor shall be required to inspect and deem if acceptable with the use of double geotextile fleecing, etc.
- I.5 The shotcrete (including smoothing layer) shall be cured for at least 24 hours prior to membrane placement.
- I.6 Steel elements, such as reinforcement bars, steel girders and the heads of rock bolts (as far as not used to hold inner lining structures) shall be covered with at least 20mm of shotcrete (or other approved method).
- I.7 Depth pins shall be cut flush with the surface and patched with mortar.
- I.8 Running water ingress shall be plugged prior to the initial lining of the tunnel with geotextile. Where heavy water ingress is encountered it shall be collected into half-pipes (e.g. flexi-drain or strip-drains, etc.), mounted by nailing and led into the permanent drainage system as appropriate.
- I.9 If water is later found excessively penetrating through the shotcrete lining, which can adversely affect the installation of membrane, the water shall be collected by means of hoses and temporarily drained to the tunnel invert (i.e. during concrete lining pour, etc.).
- I.10 The drainage shall be maintained during the membrane installation process so that no water pressure can develop behind the membrane.
- I.11 BluSeal VLDPE Tunnel Liner is to be installed over non woven geotextile of not less than 700gsm.

APPLICATION

- 2.1 BluSeal VLDPE Tunnel Liner must be installed by an approved, specialised applicator. Experienced installation techniques and testing is essential.
- 2.2 Following installation of geotextile, the compatible roundels are nailed to the surface using a suitable nail gun. Roundels shall be set in a pattern to adequately support the membrane. This will vary between the tunnel crown, walls and invert.
- 2.3 BluSeal VLDPE Tunnel Liner shall be attached to the roundels by hot air 'spot' welding.
- 2.4 The membrane shall be laid with sufficient slack (quilting) to avoid potential overstressing of the membrane sheet and possible tearing during concreting. However, it should not be installed too loose, that the membrane folds over itself during concrete placement (the membrane should be pressed against the surface during concreting).
- 2.5 Adjacent sections (rolls) of BluSeal VLDPE Tunnel Liner shall be overlapped by approximately 100mm and joined by double seam welding.
- 2.6 Double seam welds are to be tested by applying pressure to the gap between the welds.
- 2.7 Areas where a double seam weld is not possible, a hand weld is to be employed. These welds are to be tested by nail test, or if profile permits a vacuum test.

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Product Data

Please refer to Important Notice on following page

Packaging	Various widths, lengths and thicknesses available
Behaviour @ 80°C	Dimensionally stable <2% Change of tensile strength <20% Change of % elongation <20%
Density	≥900kg/m ³

TESTED CHARACTERISTIC	STANDARD	RESULT
Material Consistency	DIN 16726	≤50mm Straightness - complies ≤10mm Flatness - complies
Nominal Thickness	DIN EN 1849-2	≥2mm
Thickness of Signal Layer	DIN EN 1849-2	≤0.2mm
Tensile Strength	DIN EN ISO 527-1	≥15MPa
Elongation @ Break	DIN EN ISO 527	≥500% along/across
Puncture Resistance	DIN EN 12691	Complies 750mm drop test
Fire Resistance	DIN EN ISO 11925-2	Class E2
Biaxial Elongation	DIN EN 14151	≥50%

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IMPORTANT NOTICE

This Technical Data Sheet is provided for general information and instruction only. The properties and characteristics set out herein represent typical testing results under laboratory conditions. Results of actual product characteristics may vary slightly. Site-specific and project-specific conditions may affect product performance, including without limitation: surfaces, environmental conditions, contact conditions, storage conditions, storage timeframes, weather, and climatic or seasonal conditions. Not all product parameters are batch tested as part of the manufacturing quality control process, and performance may vary between batches.

If Bluey gives any express written product warranty in relation to the product, that warranty is subject to the foregoing qualifications, despite anything to the contrary in any other document. All other representations, advice, suggestions or promises regarding the product's performance or its implementation, whether verbal or in writing, and whenever given, including in the course of any field services, are expressly disclaimed. Without limiting the foregoing, Bluey will have no liability for loss or damage of any kind if any application specifications are not followed.

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