Technical Datasheet

Visqueen Ultimate GeoSeal

Features & benefits

- Agrement certified - third party accreditation
- Complies with NHBC Foundation's NF94 guidance for use in Type B and Type C membrane locations
- Complies with CIRIA C748:2014 - industry standard for volatile organic compounds (VOC) protection
- Complies with the methane gas transmission rate, mass per unit area and thickness requirements of BS 8485:2015 + A1:2019 - industry standard for methane and carbon dioxide protection
- Type A Barrier Membrane (Tanking Membrane) - resistant to ground water in accordance with BS 8102:2022
- High resistance to impact compared to standard Visqueen DPMs - greatly reduces risk of barrier becoming damaged during the build process
- Also provides radon and damp proof membrane protection
- Dual jointing methods - depending upon specification, lap joints can be taped or heat welded

Product description

Visqueen Ultimate Geoseal is a 1mm thick, robust pre-applied waterproofing barrier. It is coloured grey on the upper surface and black on the reverse. The grey surface is textured to aid adhesion to cast concrete. The barrier is supplied in single wound rolls (not folded), 2.44m x 20.5m.

Approvals and standards

- Third party accreditation (BDA BAF-18-056-P-A-UK)
- Complies with NHBC Foundation's NF94 guidance for use in Type B and Type C membrane locations
- Suitable for use as a Type A Barrier Membrane (Tanking Membrane) to BS 8102:2022
- Complies with CIRIA C748:2014
- Complies with the methane gas transmission rate, mass per unit area and thickness requirements of BS 8485:2015 + A1:2019
- Suitable for all Characteristic Gas Situation (CS) ground gas regimes
- Conforms to the specification requirements of BR 211:2023
- UKCA UKNI CE to EN 13967:2012
- Visqueen certified with Quality Management System ISO 9001:2015
- Visqueen certified with Occupational Health and Safety System ISO 45001:2018
- Visqueen certified with Environmental Management System ISO 14001:2015

Usage

Visqueen Ultimate GeoSeal is a pre-applied fully bonded Type A Barrier Membrane (Tanking Membrane) for use with below ground reinforced concrete structures e.g. basements, retaining walls, lift pits and car parks. The barrier also prevents the ingress of harmful levels of volatile organic compounds (VOCs) and hazardous ground gases. The pre-applied barrier can be used to achieve waterproofing to Grades 1, 2 and 3 as defined in BS 8102:2022.

Radon, carbon dioxide, methane, and VOC protection – NHBC NF94 guidance:
Visqueen Ultimate GeoSeal when installed with welded joints complies with NHBC Foundation's NF94 publication, Hazardous ground gas - an essential guide for housebuilders, in Type B membrane locations in reinforced cast in situ concrete floor slabs (ground bearing, suspended or raft). Visqueen Ultimate GeoSeal also complies with this guidance when installed with welded joints in Type C membrane locations in precast suspended segmental subfloors and reinforced cast in situ concrete floor slabs (ground bearing, suspended or raft). For site or zone characteristic gas situations of CS4 and above, contact Visqueen Technical Services.

Visqueen Ultimate GeoSeal is also suitable for a variety of geomembrane applications where harmful levels of hydrocarbon or volatile organic compounds (VOCs) exist. Applications include the wrapping of underground stormwater attenuation crates in heavy duty situations (high water table), and as an impermeable membrane placed on top of the sub grade formation level and to the sides of the sub-base within a permeable paving system. Please note that the third party certification does not cover the product's usage for stormwater attenuation or permeable paving applications.

System components

- Visqueen Pile Cap Sealer, 25kg
- VisqueenPro Detailing Strip, 300mm x 10m, 500mm x 10m
- Visqueen Retaining Discs, 50mm long x 35mm head diameter x 500 per box
- Visqueen Ultimate Top Hat Units
- Visqueen IGW5 and IGW10 Waterstops
- Visqueen 100mm Double Sided Butyl Tape, 100mm x 15m
- Visqueen NF-Detailing Strip, 300mm x 10, 500mm x 10m

Storage and handling

Visqueen Ultimate GeoSeal should be stored horizontally, under cover in its original packaging.

Care should be taken when handling the product in line with current manual handling regulations.

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Preparation

Visqueen Ultimate GeoSeal should be installed on a smooth continuous surface e.g. compacted blinding layer, smooth concrete blinding or well consolidated MOT Type 1. The substrate should be free from irregularities such as voids or protrusions.

Different jointing options are available depending on product use. Where protection against hydrostatic water pressure, VOCs or hydrocarbon contamination is required, the barrier system should be applied with welded joints.

The barrier can be cut with a sharp retractable safety knife or robust scissors.

Installation

Visqueen Ultimate GeoSeal should be loose laid on horizontal substrates and pre-applied to vertical substrate with the grey textured side facing towards the wet cast concrete so that a key to the concrete can be achieved.

The barrier has been designed to exhibit superior welding properties using hot wedge, hot air or extrusion welding, therefore onsite welding of all lap joints is recommended for all applications, and should be employed when hydrostatic water pressure or hydrocarbon/VOC contamination is present. When hot air hand welding the lap joints, the joint should be overlapped by approximately 100mm and an approximate 35mm weld is normally achieved. During hand welding, the lap joints should be firmly compressed using a hand roller to ensure an adequate bond is achieved.

Alternatively when the barrier is used for damp proofing and ground gas protection, lap joints can be bonded with Visqueen 100mm Double Sided Butyl Tape and sealed with Visqueen GR Lap Tape. When using tapes to secure laps, the overlap should be minimum 150mm and the membrane surfaces to be jointed should be dry and free from contamination such as dust or sand. Once the tapes are applied, the lap should be well rolled with a seam roller to ensure full adhesion and continuity.

The barrier should not be taken through any masonry wall. The relevant Visqueen damp proof or gas proof course should be taken through and extended beyond the wall by a minimum of 250mm where it can be jointed to the barrier with the above tapes.

When installed vertically, the barrier should be pre-applied to temporary formwork or the adjoining structure. Visqueen Retaining Discs are available to provide a means for securing the leading edge of the membrane to the temporary formwork. The barrier should be installed with the smooth black surface facing the formwork. Visqueen Retaining Discs should be mechanically fixed at maximum 400mm centres to the internal face of the shuttering using oval nails. A suitable power tool and 6mm drill bit to create a pilot hole in the barrier, it should be secured over the protruding section of the retaining disc. The top edge of the barrier should be trimmed to approximately 10mm below the top edge of the slab. Once the concrete has set, the oval nails should be removed by pulling through from the external face of the shuttering. When the temporary formwork is removed the Visqueen Retaining Discs should be visible on the external (smooth black) face of the barrier. Continuity of the barrier system with the damp or gas proof course is maintained using Visqueen Gas Resistant Self Adhesive Membrane.

Visqueen Ultimate Preformed Top Hat Units should be used for sealing service entry pipes. The base of the top hat and the upstand should be bonded using Visqueen 100mm Double Sided Butyl Tape and sealed with Visqueen GR Lap Tape. The upstand should be secured with the supplied jubilee clip. Alternatively VisqueenPro Detailing Strip or Visqueen NF-Detailing Strip can be used to seal service entry points. The upstand should be secured with a jubilee clip.

Forming an effective barrier to gases may give rise to complex three-dimensional detailing where, it is recommended that welded membrane or Visqueen Ultimate Preformed Units are used e.g. corners. Alternatively VisqueenPro Detailing Strip or Visqueen NF-Detailing Strip can be used to seal awkward junctions.

If the barrier is punctured or perforated a patch of the same material should be lapped at least 150mm beyond the limits of the puncture and, depending on the specified jointing method, either welded in position or bonded with Visqueen 100mm Double Sided Butyl Tape and sealed with Visqueen GR Lap Tape. Alternatively a patch can be formed using VisqueenPro Detailing Strip or Visqueen NF-Detailing Strip lapped at least 150mm beyond the perimeter of the puncture.

Due to the robust nature of the product, the barrier can withstand normal on-site foot traffic and the activities associated with the laying of a reinforced concrete slab without the need for additional protection. However, care should still be taken to ensure that the barrier is not punctured, stretched or displaced when applying the reinforced concrete.

To avoid excessive membrane thermal expansion when installed during high temperature conditions, the membrane should be covered immediately after installation.

Stormwater Attenuation or Permeable Paving Applications.
When used in stormwater attenuation or permeable paving applications, Visqueen Ultimate GeoSeal should be clean and dry at the time of jointing. On-site welding of joints is recommended.

If the membrane is punctured or perforated a patch of the same material should be lapped at least 150mm beyond the limits of the puncture and welded into place.

When used as a liner for stormwater attenuation crates, ensure that the base of the trench is level and free from

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voids or protrusions. Blind the substrate with minimum 100mm sand blinding, level and compact. When installing the membrane, it should be protected on the external face with Visqueen TreadGuard 300 protection layer. Due to the high puncture resistance of the membrane, in normal service conditions it does not require covering with a protective layer on the internal face, however care should still be taken to ensure that it is not punctured, stretched or displaced when positioning the crates.

When used in a System C permeable paving application, the membrane should be laid on a smooth continuous blinded subgrade free from irregularities such as voids or protrusions, or alternatively the blinding can be replaced with a layer of Visqueen TreadGuard 300 protection.

Usable temperature range

It is recommended that Visqueen Ultimate GeoSeal and all associated system components should not be installed below 5°C.

Additional information

Where required, Visqueen's network of preferred installers can install the barrier and offer the client a fully warranted system. To assist build sequencing, Visqueen Ultimate Gas DPC is available for gas protection through the wall construction.

When used in accordance with CIRIA C748:2014 or BS8485:2015 + A1:2019, a subfloor ventilation system or pressure relief maybe required.
For additional detailing information contact Visqueen Technical Services +44 (0) 333 202 6800.

The information in this datasheet was correct at the time of publication. It is the user's responsibility to obtain the latest version of the datasheet as it is updated on a regular basis. The information contained in the latest datasheet supersedes all previously published editions.

Property	Test method	Units	Criteria	Result
Colour				Grey/black
Weight		kg		48.5
Length	BS EN 1848-2	m	-0/+10%	20.5
Width	BS EN 1848-2	m	-0/+10%	2.44
BS 8485 and C748:2014 data				
Puncture	BS EN 12236	N	MDV	2850
Impact resistance Method A hard surface	BS EN 12691	mm	MDV	750
Impact resistance Method B soft surface	BS EN 12691	mm	MDV	>2000
Tensile strength MD (1) equipment unable to break the barrier	ASTM D4885-01	kN/m	MDV	11.9
Tensile strength CD (1) equipment unable to break the barrier	ASTM D4885-01	kN/m	MDV	12.7
Elongation MD (1) equipment unable to break the barrier	ASTM D4885-01	%	MDV	>500
Elongation CD (1) equipment unable to break the barrier	ASTM D4885-01	%	MDV	>501
Tear resistance - trouser method A - MD	BS ISO 34-1	kN/m	MDV	79.6
Tear resistance - trouser method A - CD	BS ISO 34-1	kN/m	MDV	75.8
Tear resistance - angle method B - MD	BS ISO 34-1	N	MDV	128.3
Tear resistance - angle method B - CD	BS ISO 34-1	N	MDV	126.9
C748:2014 - Permeation vapour tests @ 100% conc.				
Benzene	BS ISO 15105-2	ml/m²/d	MDV	<1
Toluene	BS ISO 15105-2	ml/m²/d	MDV	<1
Ethyl benzene	BS ISO 15105-2	ml/m²/d	MDV	<1
m,p xylene	BS ISO 15105-2	ml/m²/d	MDV	<1

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Hexane	BS ISO 15105-2	ml/m²/d	MDV	<1
Vinyl chloride	BS ISO 15105-2	ml/m²/d	MDV	<1
Tetrachloroethene (PCE)	BS ISO 15105-2	ml/m²/d	MDV	<1
Trichloroethene (TCE)	BS ISO 15105-2	ml/m²/d	MDV	<1
Naphthalene	BS ISO 15105-2	ml/m²/d	MDV	<1
C748:2014 - Chemical immersion testing (2) (2) Pass achieved if barrier under test is within 25% of untested barrier		Weight % (2)	Thickness % (2)	Tensile/elongation (2)
Benzene	BS EN 14414	Pass	Pass	Pass
Toluene	BS EN 14414	Pass	Pass	Pass
Ethyl benzene	BS EN 14414	Pass	Pass	Pass
(m,p, and o) xylenes	BS EN 14414	Pass	Pass	Pass
Hexane	BS EN 14414	Pass	Pass	Pass
Vinyl chloride	BS EN 14414	Pass	Pass	Pass
Tetrachlororthene (PCE)	BS EN 14414	Pass	Pass	Pass
Trichloroethene (TCE)	BS EN 14414	Pass	Pass	Pass
Naphthalene	BS EN 14414	Pass	Pass	Pass
CE Marking to EN 13967:2017				
Characteristic	Test method	Units	Criteria	Result
Tensile Strength - MD	BS EN 12311	N/mm²	MDV	23.6
Tensile Strength - CD	BS EN 12311	N/mm²	MDV	22.4
Tensile Elongation - MD	BS EN 12311	%	MDV	701
Tensile Elongation - CD	BS EN 12311	%	MDV	706
Joint Strength	BS EN 12317-2	N	MDV	598
Watertightness to 60 kPa for 24 hours	BS EN 1928	-	Pass/Fail	Pass
Resistance to impact	BS EN 12691	mm	MDV	700
Durability watertightness after heat ageing	BS EN 1296	60kPa	Pass/Fail	Pass
Durability watertightness against chemicals	BS EN 1847	-	Pass/Fail	Pass
Resistance to tearing (nail shank) CD	BS EN 12310-1	N	MDV	720
Resistance to tearing (nail shank) MD	BS EN 12310-1	N	MDV	750
Resistance to static loading	BS EN 12730	kg	>MLV	20
Water vapour transmission - resistance	BS EN 1931	MNs/g	MDV	2142
Water vapour transmission - permeability	BS EN 1931	g/m²/d	MDV	0.063
Watertightness welded and taped joint	BS EN 1928	60kPa	Pass/Fail	Pass
Methane gas transmission rate (unjointed)	BS ISO 15105-1	ml/m²/day/ atm	<40	3.2
Methane gas transmission rate (jointed)	BS ISO 15105-1	ml/m²/day/ atm	<40	34.7
Carbon dioxide gas transmission rate (unjointed)	BS ISO 15105-1	ml/m²/day/ atm	<40	7
Radon permeability	SP RI.SE	m²/s		3.0 x 10^{-12}

Health and safety information

Refer to the Visqueen Ultimate GeoSeal safety datasheet (SDS).

About Visqueen

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Visqueen Ultimate GeoSeal

Visqueen is a leading provider of construction membrane technologies and design-based solutions for ground gas, structural waterproofing, damp proofing and fire protection.

We offer complete support at every stage of the specification, including the supply chain process. As the UK's principal technical authority, we are best placed to ensure that the principal designer and contractor specify the most technically suited, durable, and competitive solution to guarantee their project is protected for the lifetime of the building.

Visqueen is at the forefront of advanced membrane technology and innovation in the construction industry, earning the trust and loyalty of specifiers throughout the UK and Europe.

For more information, visit visqueen.com or contact our sales office at +44 (0) 333 202 6800 or enquiries@visqueen.com

Complete Range, Complete Solution

Passive Fire Protection | Gas Protection | Damp Proof Membrane | Air and Vapor Control | Stormwater | Damp Proof Course | Temporary Protection

Visqueen Technical Support

Visqueen offer a comprehensive full nationwide technical support. Our team of CSSW qualified technical support managers provide on site design-based solutions for specifiers, contractors and builders merchants, and will ensure that from design stage to installation the project is fully risk assessed and the specification is approved by all stakeholders.

Our Technical Office, can design, prepare and manage CAD detailing, together with assisting in quantity take offs, while offering advice on technical installations and product selection.

Competency & Design

Visqueen promotes competency in building design by ensuring that its technical team possesses the necessary skills, knowledge, experience, and ethical practices. The company adopts the "golden thread of information," ensuring all project data is digitally secure and accessible throughout a building's lifecycle. This approach aligns with the Building Safety Act and aims to foster accountability and compliance with evolving regulations, providing clients with confidence in the safety and reliability of their projects.

Visqueen CPD Seminars

Visqueen's CPD Seminars offer insights into Building Regulations, Standards, and industry guidance related to damp proofing, hazardous ground gas protection, and structural waterproofing. These one-hour seminars are tailored for construction design professionals and delivered by our Technical Support Managers. Visit our website to book a free CPD.

Visqueen Contract Design Services

Visqueen Contract Design Services offers a bespoke design service led by our team of Certified Surveyors in Structural Waterproofing (CSSW), providing experienced and specialised waterproofing design expertise for complex projects. We provide comprehensive support throughout the entire project, ensuring that all work meets the requirements of warranty providers and adheres to the highest standards of quality, reliability and current legislation.

Visqueen Training Academy

Based at our Derbyshire facility, the Visqueen Training Academy offers a variety of training programs across the UK. These include one-day product awareness sessions for distributors and builders' merchants, and intensive two-day courses for hands-on product installation training. Contact us for more information.

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