Technical Datasheet

# Visqueen Gas Barrier NF-400

## Features & benefits

- BDA Agrement Certification - third party accreditation
- Complies with NHBC Foundation NF94 guidance for use in Type A membrane locations - non foil system
- 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
- Multi functional - also acts as a radon and damp proof membrane
- Dual jointing methods - depending upon specification, lap joints can be heat welded or taped

## Product description

Visqueen Gas Barrier NF-400 is a co-extruded, multi-layer thermoplastic gas membrane, 0.4mm thick (400 micron). The membrane is blue on the upper surface, white on the underside and supplied 2.4m x 43.5m in a single wound roll.

## Approvals and standards

- Third party accreditation (BDA Agrement Certificate BAB-24-339-P-A-UK)
- 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
- Complies with NHBC Foundation NF94 guidance for use in Type A membrane locations (non foil system)
- Conforms to the specification requirements of NHBC Amber 1 and Amber 2 applications
- 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 Gas Barrier NF-400 is suitable for use in all types of buildings to prevent the ingress of harmful levels of methane, carbon dioxide and radon.

The barrier can be positioned above or below reinforced cast in situ concrete floor slabs e.g. ground bearing, suspended or raft, or above precast suspended segmental subfloors, e.g. beam and block floor.

The barrier can also be used as a high performance radon membrane and/or damp proof membrane.

NHBC NF94 guidance: Radon, carbon dioxide, and methane protection
Visqueen Gas Barrier NF-400 when installed with either welded or taped joints complies with NHBC Foundation NF94 publication, Hazardous ground gas - an essential guide for housebuilders, in Type A 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 Office.

The barrier is not intended for use where there is a risk of hydrostatic pressure.

## System components

- VisqueenPro Double Sided Jointing Tape, 50mm x 10m
- VisqueenPro Detailing Strip, 300mm x 10m
- Visqueen TreadGUARD 1500, 1m x 2m
- Visqueen TreadGUARD 300, 2m x 75m
- Visqueen Ultimate Top Hat Units
- Visqueen NF-Detailing Strip, 300mm x 10m
- Visqueen NF-60 Lap Tape, 60mm x 45m
- Visqueen NF-150 Lap Tape, 150mm x 10m

## Storage and handling

When storing Visqueen Gas Barrier NF-400 care should be taken to:
- store in its original packaging;
- avoid exposure to direct sunlight and high or low temperatures for prolonged periods of time;
- store in a well-ventilated covered area to protect from rain, frost, humidity and mechanical damage;
- store away from possible ignition sources;
- store rolls of the barrier horizontally on a flat surface and not stacked.

Care should be taken to avoid accidental damage to the product when handling on site.

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



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# Visqueen Gas Barrier NF-400

## Preparation

Visqueen Gas Barrier NF-400 should be installed with the blue side facing upwards onto a smooth, continuous surface. e.g. grouted beam and block floor, a compacted blinding layer e.g. 50mm thick sand blinding, or smooth concrete blinding. The substrate should be free from irregularities such as loose aggregates or other sharp protrusions, voids, projections or mortar deposits.

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

Hand rollers are required during lap joint formation and sealing membrane detailing. Typical hand rollers include 40mm silicone pressure roller and 6mm brass penny pressure roller.

Consult the project specification to ensure the correct method of lap joint formation for the project is followed (welded or taped).

Rolls of tape should be kept in a warm, dry location prior to use to ensure the tape is workable and can be more easily applied.

## Installation

Installation of Visqueen Gas Barrier NF-400 should be carried out by a competent contractor experienced with this type of product e.g. hold an NVQ Level 2 Diploma in substructure work occupations (Installation of Gas Membranes - Construction).

The installation should be subjected to third-party validation in accordance with BS 8485:2015 +A1:2019 and CIRIA C735.

Visqueen Gas Barrier NF-400 should be loose laid on the substrate with the blue side facing upwards ensuring that the barrier sheet edges are aligned allowing adequate overlap for jointing between the sheets.

The barrier lap area should be clean and dry at the time of jointing. The barrier has been designed to exhibit superior welding properties using hot wedge and hot air welding, therefore onsite welding of all lap joints is recommended. 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.

When taping the lap joints, the joint should be overlapped by approximately 100mm and bonded with VisqueenPro Double Sided Jointing Tape (positioned approximately 25mm from the edge of the sheet) and sealed with Visqueen NF-60 Lap Tape or Visqueen NF-150 Lap Tape depending on the project specification. The lap joints should be firmly compressed using a hand roller during taping to ensure an adequate bond is achieved.

Creating an effective gas barrier often requires complex three-dimensional detailing, such as around internal and external walls, corners, doorway thresholds, service pipes, party walls, and structural columns. Visqueen NF-Detailing Strip is gas resistant and can be used in place of the gas barrier to maintain continuous protection. The detailing strip lap joints should be firmly compressed using a hand roller to ensure an adequate bond is achieved. Visqueen Ultimate Preformed Units are also available.

If the barrier is punctured or perforated a patch of the same material should be lapped at least 100mm beyond the limits of the puncture and either welded in position, or bonded with VisqueenPro Double Sided Jointing Tape (positioned approximately 25mm from the edge of the sheet) and sealed with Visqueen NF-60 Lap Tape or Visqueen NF-150 Lap Tape depending on the project specification. Alternatively a patch can be formed using Visqueen NF-Detailing Strip lapped at least 150mm beyond the extents of the puncture.

Long periods of exposure to ultraviolet light will reduce the effectiveness of the barrier. The barrier should be covered by a protective layer e.g. Visqueen TreadGuard protection or other approved protection material, immediately after installation to prevent damage from following trades, ultraviolet light, etc. Care should be taken to ensure that the barrier is not punctured, stretched or displaced during or post installation.

VisqueenPro Detailing Strip is also suitable for sealing detailing junctions and patch repairs, however when the gas protection measures are to conform with the requirements of NHBC NF94 guidance, please ensure acceptance by all stakeholders prior to use.

## Usable temperature range

When Visqueen Gas Barrier NF-400 is installed with taped lap joints, the air temperature should not be below 5°C or falling to prevent the risk of surface condensation affecting the tape adhesion.

When ambient temperatures are above 25°C or rising, the barrier should be covered immediately after installation.

## Additional information

When used in accordance BS8485:2015 + A1:2019 a subfloor ventilation system or pressure relief may also be required.

To assist build sequencing, Visqueen Ultimate Gas DPC is available for gas protection through the wall construction.



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# Visqueen Gas Barrier NF-400

Technical Datasheet

For further information contact Visqueen Technical Office on 0333 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 | Compliance criteria | Result |
|---|---|---|---|---|
| Dimensions | BS EN 1848-2 | m | - | 2.4 x 43.5 |
| Nominal thickness | BS EN 1849-2 | mm | +/-10% | 0.4 |
| Mass | BS EN 1849-2 | g/m² | >370 | >370 |
| Tensile strength - machine direction | BS EN 12311-2 method B | N/mm² | MDV | 26.3 |
| Tensile strength - cross direction | BS EN 12311-2 method B | N/mm² | MDV | 29.4 |
| Elongation at break - machine direction | BS EN 12311-2 method B | % | MDV | 607 |
| Elongation at break - cross direction | BS EN 12311-2 method B | % | MDV | 921 |
| Joint strength - taped joint | BS EN 12317-2 | N/50mm | MDV | 217 |
| Joint strength - welded joint | BS EN 12317-2 | N/50mm | MDV | 405 |
| Watertightness at 2kPa for 24 hours | BS EN 1928 method A | - | Pass/Fail | Pass |
| Watertightness at 2kPa for 24 hours after ageing | BS EN 1296 (12 weeks) + BS EN 1928 method A | - | Pass/Fail | Pass |
| Watertightness at 2kPa for 24 hours after alkali environment | BS EN 1847 (28 days) + BS EN 1928 method A | - | Pass/Fail | Pass |
| Resistance to impact | BS EN 12691 method A | mm | MDV | 400 |
| Low temperature flexibility | BS EN 495-5 | °C | MDV | -20 |
| Resistance to tearing (nail shank) - machine direction | BS EN 12310-1 | N | MDV | 265 |
| Resistance to tearing (nail shank) - cross direction | BS EN 12310-1 | N | MDV | 240 |
| Water vapour resistance | BS EN 1931 method B | MNs/g | MDV | 2,296 |
| Water vapour permeability | BS EN 1931 method B | g/m²/d | MDV | 0.08 |
| Water vapour resistance factor | BS EN 1931 method B | µ | MDV | 1,140,000 |
| Water vapour diffusion equivalent air layer thickness | BS EN 1931 method B | SD in m | MDV | 459 |
| Methane gas transmission rate - membrane | BS ISO 15105-1 | ml/m²/day/atm | MDV | 13.2 |
| Methane gas transmission rate - welded membrane joint | BS ISO 15105-1 | ml/m²/day/atm | MDV | 15 |
| Carbon dioxide gas transmission rate | BS ISO 15105-1 | ml/m²/day/atm | MDV | 22 |
| Radon gas transmission rate - membrane | SP method | m/s | MDV | <3.0 x 10-9 |
| Puncture CBR | BS EN 12236 | N | MDV | 1620 |
| Tensile yield strength - machine direction | ASTM D4885-01 | kN/m | MDV | 8 |



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|---|---|---|---|---|
| Tensile yield strength - cross direction | ASTM D4885-02 | kN/m | MDV | 7.3 |
| Resistance to static loading | BS EN 12730 method C | kg | MDV | 15 |
| Elongation yield - machine direction | ASTM D4885-01 | % | MDV | 405.3 |
| Elongation yield - cross direction | ASTM D4885-01 | % | MDV | 400.2 |
| Tear resistance - trouser method A - machine direction | BS ISO 34-1 | kN/m | MDV | 128 |
| Tear resistance - trouser method A - cross direction | BS ISO 34-1 | kN/m | MDV | 109.7 |
| Tear resistance - angle method B - machine direction | BS ISO 34-1 | N | MDV | 137 |
| Tear resistance - angle method B - cross direction | BS ISO 34-1 | N | MDV | 139.6 |

## Health and safety information

Refer to the Visqueen Gas Barrier NF-400 safety datasheet (SDS).

## About Visqueen

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



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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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