

Mr Allen Robert Dawson
56 Lewis Road
Ditchling
Sussex
BN6 8TU

11th December 2025

Reference: 091 WYKMAPL

Wykamol are providing a Ground Gas Protection System design for the project located at Townhouse Farm, Church Lane, Ardingly, Haywards Heath, RH17 6UR

The site has been confirmed as CS3 and will be used for residential purposes. In accordance with BS8485:2015 +A1:2019 4.5 Points are required from the ground gas protection system.

Please see Table 4 from BS8384:2019 below:

Table 4 — Gas protection score by CS and type of building

CS	Minimum gas protection score (points)			
	High risk	Medium risk		Low risk
	Type A building	Type B building	Type C building	Type D building
1	0	0	0	0
2	3.5	3.5	2.5	1.5
3	4.5	4	3	2.5
4	6.5 ^{A)}	5.5 ^{A)}	4.5	3.5
5	— ^{B)}	A1 6 A1 ^{A)}	5.5	4.5
6	— ^{B)}	— ^{B)}	A1 — ^{B)} A1	A1 6 A1

^{A)} Residential buildings should not be built on CS4 or higher sites unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations.

^{B)} The gas hazard is too high for this empirical method to be used to define the gas protection measures.

This will be achieved by installing a ground gas membrane that complies with Table 7 of BS8485:2019 (2.0 Points) and Ventilation to the sub floor void (2.5 Points for excellent).

Please refer to the specification below and the drawings in Appendix 01.

Wykamol – Specification

Ventilation:

The sub floor void ventilation will include Timloc Telescopic Vents to the perimeter walls as shown on plan in Appendix 01. Ensure minimum 450mm from the ends of the walls. Also highlighted on plan are the sleeper walls blocking cross ventilation. These should be constructed to create a honey-comb structure creating 4-5 times area of ventilation than the number of telescopic vents in the adjacent walls for that contained section. Alternatively, spaces can be left between blocks, but 4-5 times area of ventilation must be achieved to obtain 2.5 Points for excellent ventilation. Structural Engineer to confirm design prior to construction.

Timloc Telescopic Vents achieve 6000mm² ventilation per unit. In accordance with BS8485:2019 Section B.6 – 2000mm²/m run of wall will provide sufficient ventilation. Please refer to ventilation layout in Appendix 01 for ventilation layout suitable for this structure.

Ground Gas Membrane:

Quadproof Evolution is to be installed across the top of the suspended block and beam as shown in Appendix 01. Joints are to be hot welded or sealed with **Gas Tape** inside the joints. Ensure all capillary leaks between layers are fully sealed.

Corner Details and Pipe Penetrations are to be sealed with **Wykamol GR Foil** membrane as per NVQ Level 2 Ground Gas Membrane Installation.

If the installation is to be carried out over winter, we recommend installing the membrane through the perimeter walls first leaving a 300mm tail at the base of the inner leaf extending across the block and floor. Ensure corner details and joints are all fully sealed and verified. Once the building is watertight, complete the installation by cleaning down the block and beam floor, patch repairing the tail and extending the **Quadproof Evolution** through each room. Joints to be hot welded or sealed with **Wykamol Gas Tape**.

As the site is CS3 we recommend the ground gas membrane is installed by an NVQ Level 2 Ground Gas Membrane Installer. Contact details can be given if required.

The membrane should always be protected from damage by follow on trades. Independent Verification of the Ground Gas Membrane will be required to ensure 2.0 Points are achieved and that the attached planning condition is discharged.

Materials included in the Specification:

- **Timloc Telescopic Vents**
- **Quadproof Evolution**
- **Gas Tape (if joints not hot welded)**
- **Wykamol GR Foil**

Final Guidance & Recommendations

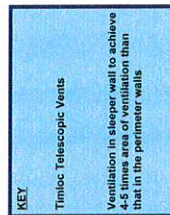
This specification follows the requirements of BS8485:2015+A1:2019. Please contact an independent verifier and instruct them to carry out a Pre-Verification Plan and arrange inspection and sign off for the ground gas protection system so the attached Planning Condition can be discharged.

For and on behalf of The Wykamol Group

Chris Ingham B.Sc. Eng. CSSW
National Specification Manager
07919064450

DRAWINGS TO BE READ IN CONJUNCTION WITH ENGINEERS DETAILS

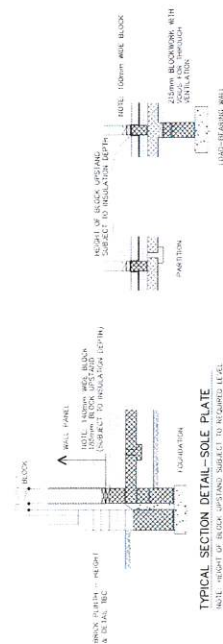
OUTSIDE FACE FOUNDATION
OUTSIDE FACE OF LOW-LEVEL BRICK PILEH
INSIDE FACE OF LOW-LEVEL BRICK PILEH
OUTSIDE FACE OF INNER LEAF BRICKWORK (1-6mm)
INSIDE FACE OF INNER LEAF BRICKWORK
INSIDE FACE OF FOUNDATION



KEY

Timloc Telescopic Vents

Ventilation in sleeper wall to achieve 4-5 times area of ventilation than that in the perimeter walls



TYPICAL SECTION DETAIL—SOLE PLATE

NOTES:
PROVIDE TELESCOPIC VENTS/AIR BROOKS MAX. 450mm FROM CORNERS AND AT
MAXIMUM 2 METRE CENTRES.

NOTE: FOUNDATION DEPTH, WIDTH & DESIGN TO BE AGREED ON SITE WITH LOCAL AUTHORITY BUILDING CONTROL OFFICER/NHBC SUBJECT TO PREVALENT SOIL CONDITIONS & TYPE, PROXIMITY TO TREES ETC.

Wykamol - Ventilation Layout - 11/12/25

FOR

MR & MRS DAWSON

DISCUSSION

TOWNHOUSE FARM,

CHURCH LANE,

ARDINGLY,

HAYWARDS HEATH, F.

Table 1

SETTING OUT DE

(REVISED SCHEM

SCALE	DRAWN	DRAWING
1:1	1:1	1:1

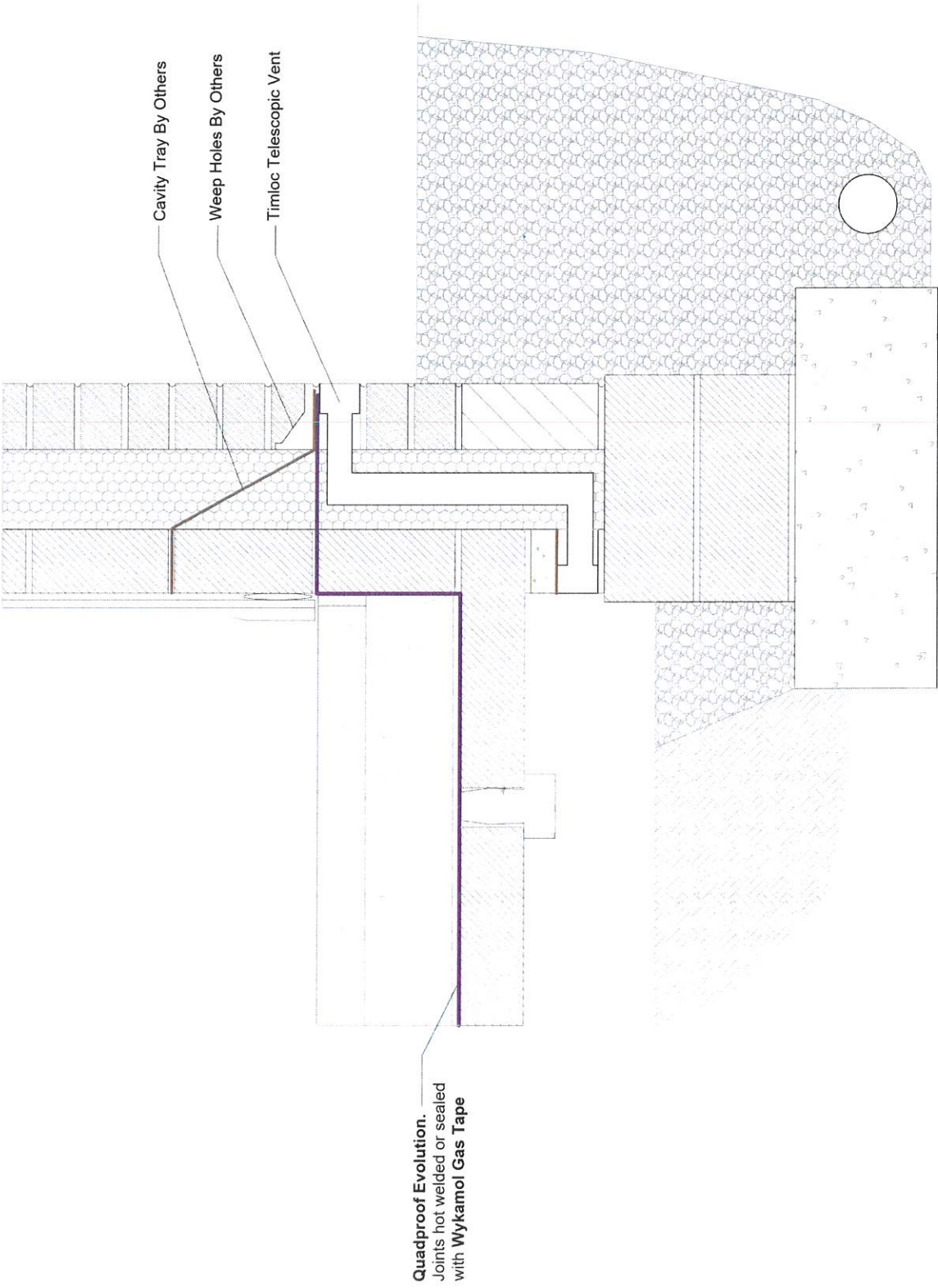
Time	AH	Q
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@ A1	12/25
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Information on this standard detail is done so without obligation and warranty.



REVISION HISTORY	
Date	Description

Client: Standard Details

Project: Standard Details

Drawing Title: Suspended Block and Beam - Telescopic Vents - Gas Barrier

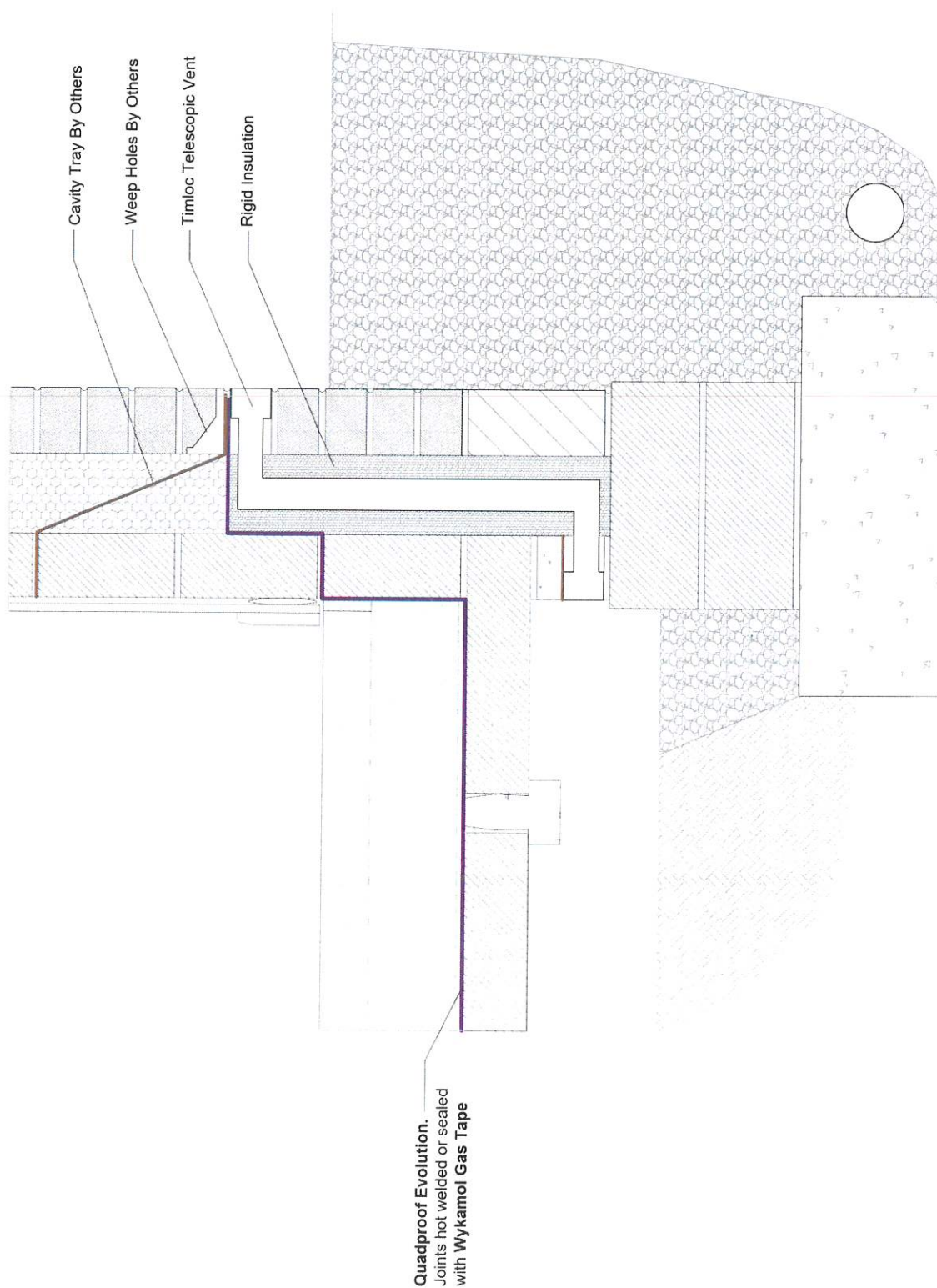
Drawing Reference: WYK-CE-48B-Telescopic Vents

Scale: Drawn: Checked: Reviewed: Date: 05/08/2024

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Cavity Tray By Others

Weep Holes By Others

Timloc Telescopic Vent

Rigid Insulation

[illegible]

Client: _____ Standard Details _____

Project: **Standard Details**

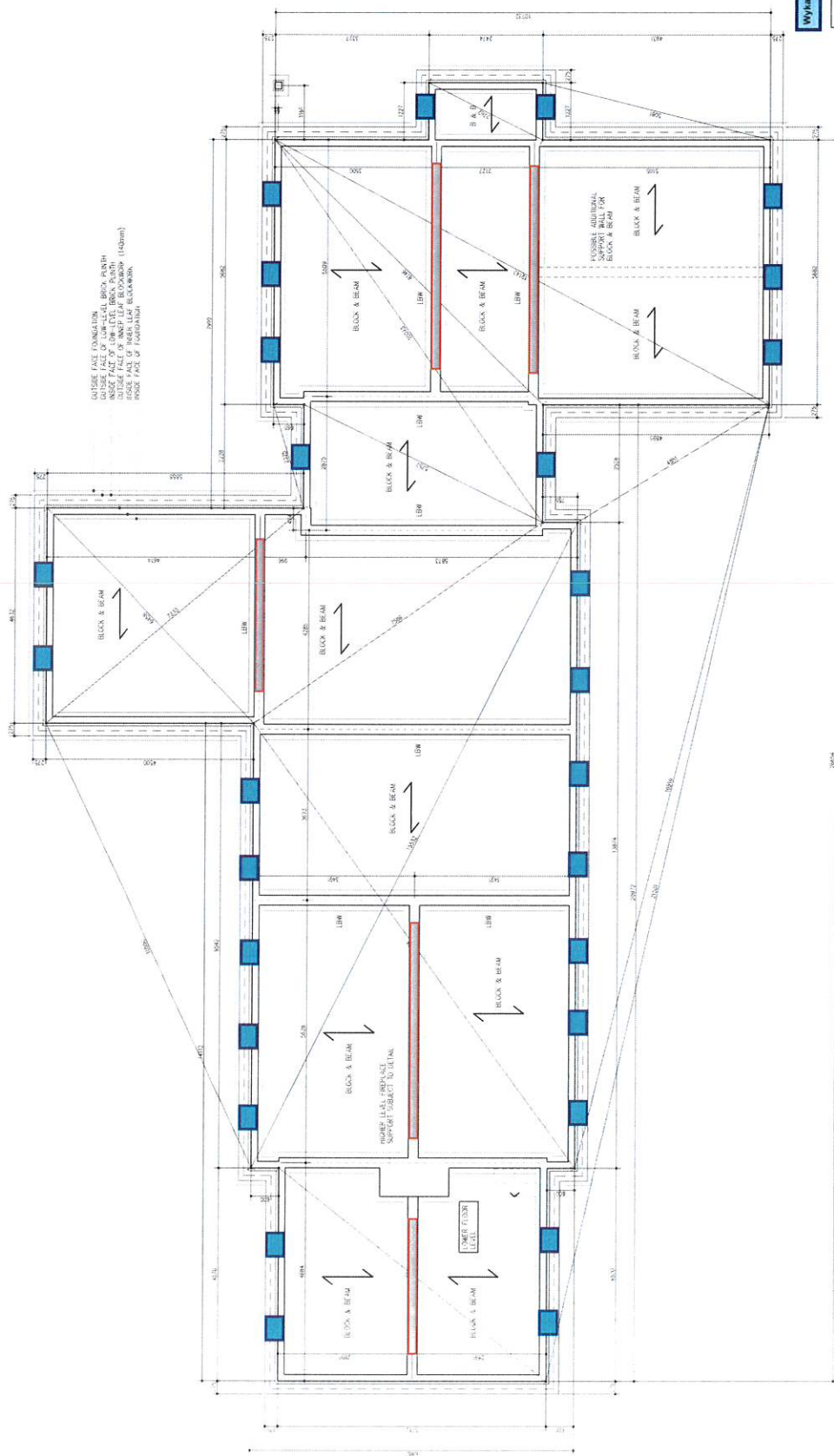
Drawing Title:
Suspended Block and Beam - Telescopic Vents - Level
Threshold - Quadproof Evolution

Drawing Reference;	Date:
WYK-QE-BB-Telescopic Vents - Level Threshold	03/12/2024

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DRAWINGS TO BE READ IN CONJUNCTION WITH ENGINEERS DETAILS

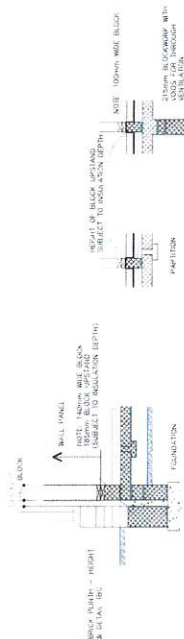
NOTE: ADDITIONAL SUPPORT WALLS MAY BE REQUIRED IF BLOCK & BEAM FLOOR—SUBJECT TO SUPPLIERS SPECIFICATION, (SUB-FLOOR VENTILATION & DETAILING TO BE IN ACCORDANCE WITH CURRENT BUILDING REGULATIONS)



KEY:

Timloc Telescopic Vents

Ventilation in sleeper wall to achieve 4-5 times area of ventilation than that in the perimeter walls



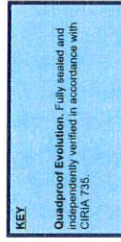
NOTES:
PROVIDE TELESCOPIC VENTS/AIR BRICKS MAX. 450mm FROM CORNERS AND AT

NOTE: FOUNDATION DEPTH, WIDTH & DESIGN TO BE AGREED ON SITE WITH LOCAL AUTHORITY BUILDING CONTROL OFFICER/NHBC SUBJECT TO PREVALENT SOIL CONDITIONS & TYPE, PROXIMITY TO TREES ETC.

Wykamol - Ventilation Layout - 11/12/25	FOR	MR. & MRS DAWSON	TOWNHOUSE FARM, CHURCH LANE, ARDINGLY, HAYWARDS, HEATH, RH17 6UR	SETTING OUT DETAILS (REVISED SCHEME)	TITLE
	SCALE 1:50 (@ A1)	DRAWING AH 12/25	DRAWING NO 06 REV		

DRAWINGS TO BE READ IN CONJUNCTION WITH ENGINEERS DETAILS

OUTSIDE FACE FOUNDATION
OUTSIDE FACE OF LOW-LEVEL BRICK PUNTH
INSIDE FACE OF LOW-LEVEL BRICK PUNTH
OUTSIDE FACE OF INNER LEAF BLOCKWORK (140mm)
INSIDE FACE OF OUTER LEAF BLOCKWORK
INSIDE FACE OF FAUCIADAZIN



NOTE: UPSTAND BLOCK-WARE REQUIRED THROUGHOUT. PLATES CUT OUT IN DOORWAYS ON SITE.
HEIGHT OF UP-STAND SUBJECT TO CLIENTS INSULATION/SCORING REQUIREMENTS.



TYPICAL SECTION DETAIL—SOLE PLATE

NOTE: HEIGHT OF BLOCK UPSTAIR SUBJECT TO REQUIRED LEVEL OF FLOOR INSULATION + 65-12mm SCHED

NOTE: FULL-HEIGHT BLOCK OPTION IS AVAILABLE WITH ADDITIONAL INSULATION/SCREEN INTRODUCED

NOTES:
PROVIDE TELESCOPIC VENTS/AIR BRICKS MAX. 450mm FROM CORNERS AND AT
MAXIMUM 1.5m. AETEC® CE 450/200

NOTE: FOUNDATION DEPTH, WIDTH & DESIGN TO BE AGREED ON SITE WITH LOCAL AUTHORITY BUILDING CONTROL OFFICER/NHBC SUBJECT TO PREVALENT SOIL CONDITIONS & TYPE, PROXIMITY TO TREES ETC.

Wykamol - Membrane Layout - 11/12/25

FOR
MR & MRS DAWSON

SITE
TOWNHOUSE FARM,
CHURCH LANE,
ARDINGLY,
HAYWARDS HEATH RH17 6UR

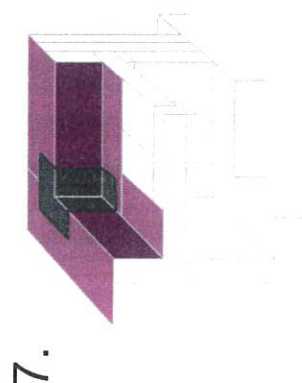
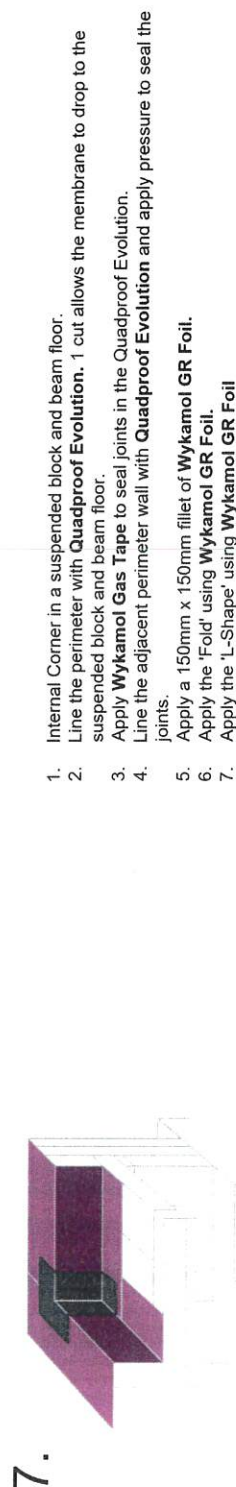
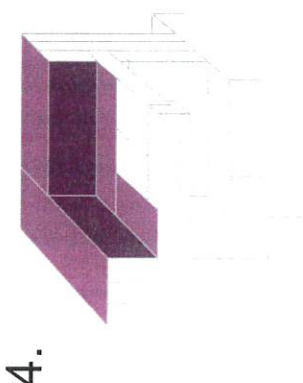
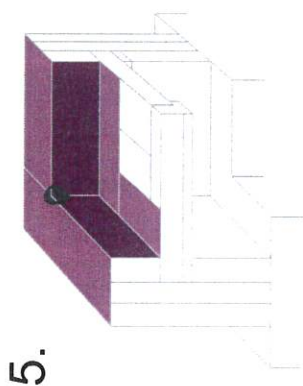
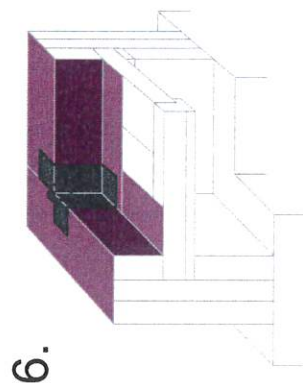
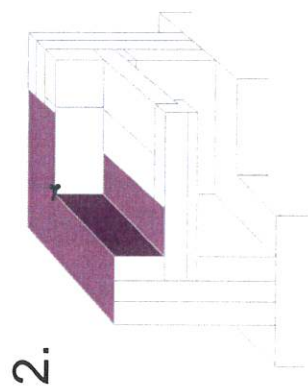
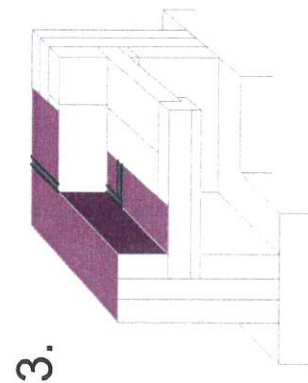
TITLE
SETTING OUT DETAILS
(REVISED SCHEME)

SCALE 1:50 (@ A1)	DRAWN AH 12/25	DRAWING NO 06	REV
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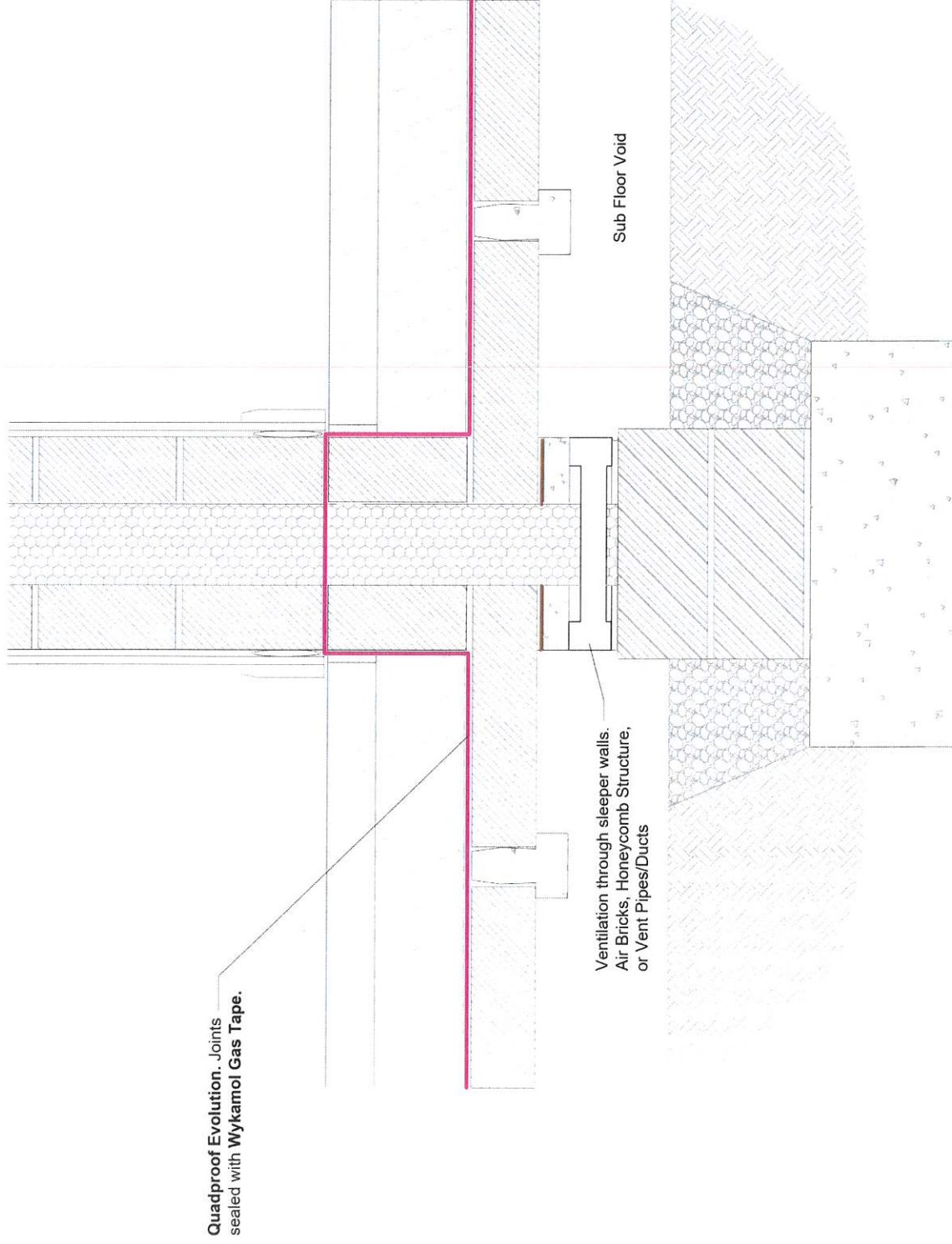
1. Internal Corner in a suspended block and beam floor.
2. Line the perimeter with **Quadproof Evolution**. 1 cut allows the membrane to drop to the suspended block and beam floor.
3. Apply **Wykamol Gas Tape** to seal joints in the Quadproof Evolution.
4. Line the adjacent perimeter wall with **Quadproof Evolution** and apply pressure to seal the joints.
5. Apply a 150mm x 150mm fillet of **Wykamol GR Foil**.
6. Apply the 'Fold' using **Wykamol GR Foil**.
7. Apply the 'L-Shape' using **Wykamol GR Foil**

[illegible]

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REVISION HISTORY	
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Client:	Standard Details
Project:	Standard Details
Drawing Title:	Surrounded Block and Beam - Partition Walls
Drawing Reference:	WTK-GB-Partition Walls
Date:	03/27/2024
Revision:	
Drawn:	Checked:
Scale:	Reviewed:

QUADPROOF EVOLUTION MEMBRANE

Total Ground Gas control

**High specification
co-extruded multi-layer
barrier specifically
developed for use on
construction sites.**



Quadproof Evolution is a high specification co-extruded multi-layer barrier specifically developed for use on construction sites contaminated by Volatile Organic Compounds, Hydrocarbons and other ground gasses such as Methane, Radon and CO₂.

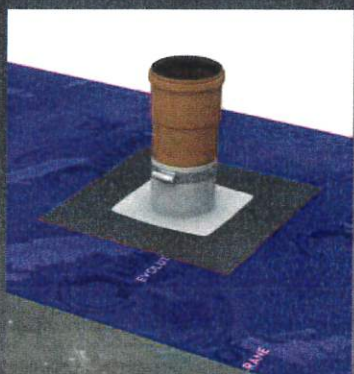
The product is 14 layers and contains 2 layers of gas barrier polymer (EVOH) to offer exceptional performance and prevent the ingress of dangerous gasses into buildings.

It is manufactured using the latest co-extrusion technology and cannot delaminate. The product will also act as a damp-proof membrane.

The membrane is manufactured using High Performance engineering Polymers to give exceptional strength and does not require reinforcement. It can be installed by the use of sealing tapes or can easily be welded.

A NEW GENERATION OF GAS BARRIER

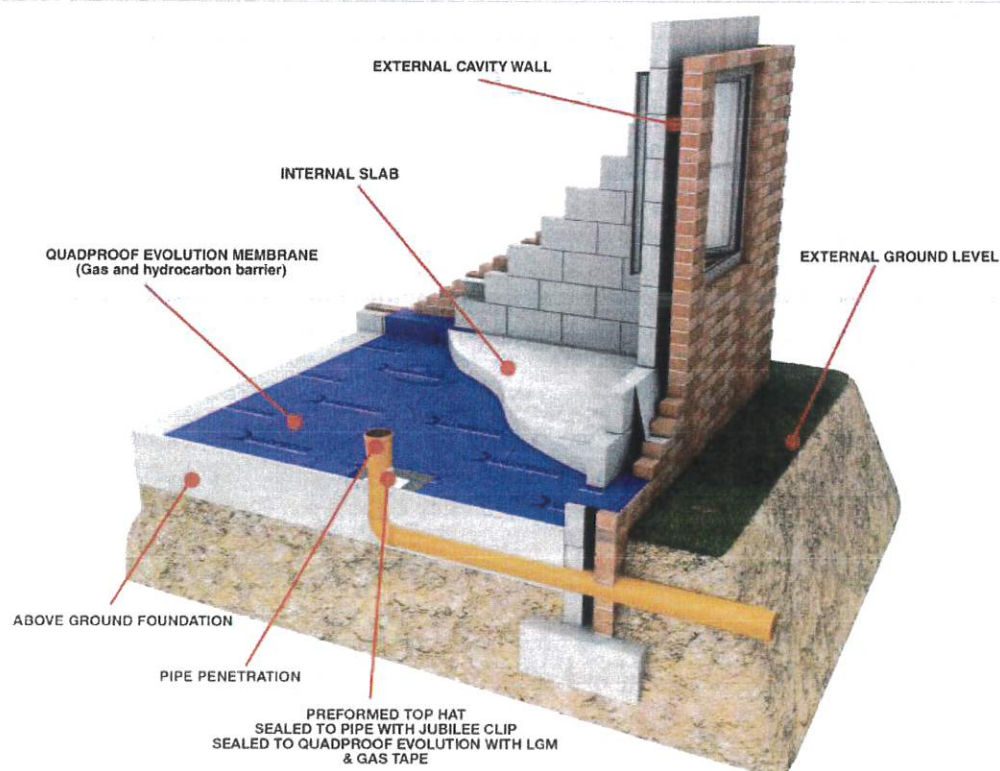
- Advanced Fourteen-Layer Barrier
- Complies with CIRIA 748
- Two layers of Ethylene Vinyl Alcohol Co-Polymer (EVOH)
- Outstanding Gas Resistance
- Conforms with BS8485:2015+A1:2019 (Table7)
- Conforms to BS8102:2022
- Conforms to the specification requirements of NHBC Amber 1 & 2 applications
- Suitable for all characteristic Gas Situation (CS) ground gas regimes
- Excellent Welding Characteristics



TECHNICAL DATASHEET

Material Properties	Test Method	Value	
Thickness (µm)	N/A	400µm	+/- 6%
Width (mm)	N/A	1.65m	+6mm/-0mm
Length (mm)	N/A	61m	+6mm/-0mm
Repeat Tolerance (mm)	N/A	N/A	
Dynamic C.O.F	BS 2782-824A	0.4 +/- 0.1	
Tensile break force (%)	ASTM D882 / DIN 53455	MD >160	TD >175
Tensile strength @ break (%) MPA	ASTM D882 / DIN 53455	MD >16	TD >16
Elongation Break (%)	ASTM D882 / DIN 53455	MD >500	TD >550
Slow Puncture deflection (mm)	3mm radius	> 3	
Slow Puncture force (N)	-3mm radius	> 30	
Density (nominal) (g/cm ³)	-	0.957 g/cm ³	
Unit Weight (g/m ²)	-	382.8	
Sealing Range	RFM 8	110°C - 150°C	

Barrier Properties*	Test Method	Value
OTR	ASTM F 1927, 20°C 60% RH	Less than 0.75 cc
WVTR	ASTM F 1249, 38°C 90% RH	Less than 2.0g

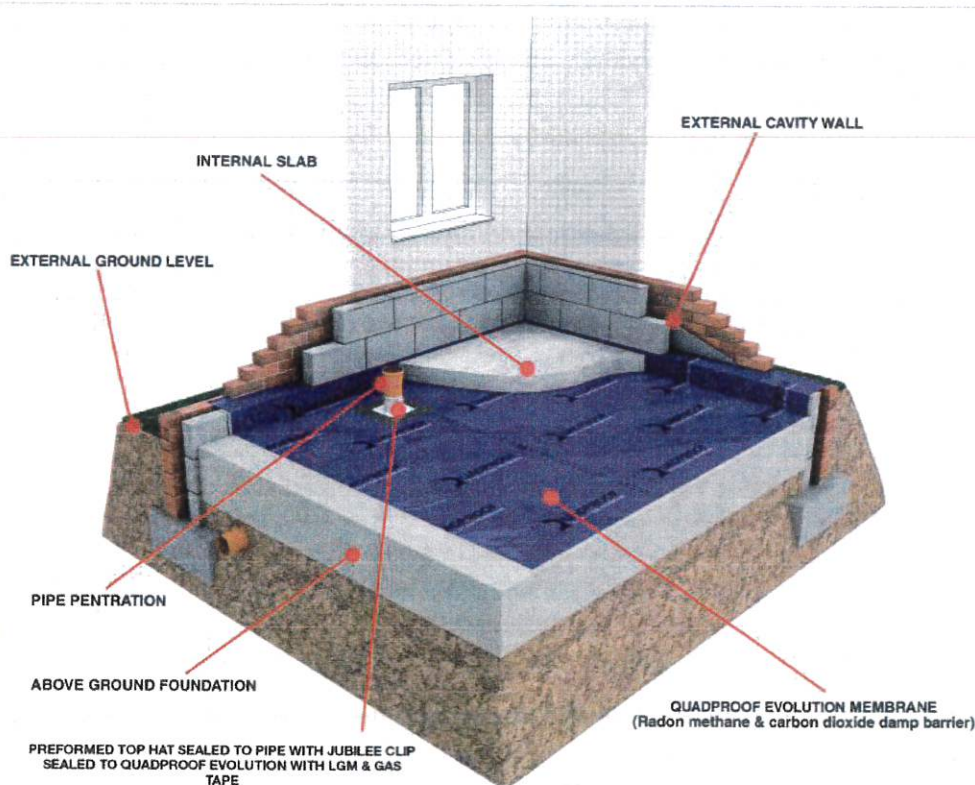


QUADPROOF EVOLUTION MEMBRANE

BS8485:2015+A1:2019

Meets all the following criteria:

- Sufficiently impervious to the gases with a methane gas transmission rate $<40.0 \text{ ml/day/m}^2/\text{atm}$ (average) for sheet and joints (tested in accordance with BS ISO 15105-1 manometric method)
- Sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions
- Sufficiently strong to withstand in-service stresses (e.g settlement if placed below floor slab)
- Sufficiently strong to withstand the installation process and following trades until covered (e.g penetration from steel fibres in fibres reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc)
- Capable, after installation, of providing a complete barrier to the entry of the relevant gas



Test	Standard	Unit	Result
Determination of gas transmission rate*	ISO 15105-1 10.2007		
Test gas: Methane (CH ₄)			
Gas permeability at 23°C / 0 % r.H.		cm ³ /(m ² d.bar)	≤ 0,09
Gas permeability at 23°C / 0 % r.H.		ml/(m ² d.atm)	≤ 0,09

TECHNICAL DATA

INTENDED USE:

The Pre-Applied Waterproofing Membrane is a flexible sheet for water proofing, for use to damp-proof and waterproof below ground structures and to protect the building from the ingress of water and water vapour, radon, methane and CO₂, hydrocarbons and VOC's.

Waterproofing membrane tested in accordance with EN 13967:2012+A1:2017 Flexible sheets for waterproofing -

Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet - Definitions and characteristics.

Testing elements from European Assessment Document EAD 030378-00-0605 Fully bonded, pre-applied flexible sheet for waterproofing.

Testing Notified Body: 0761 - Materialprüfanstalt für das Bauwesen (MPA BS)

ESSENTIAL CHARACTERISTICS	TEST CONDITION	PERFORMANCE
Thickness (Overall)	Nominal	1.9mm nominal
Thickness (Membrane)	DIN EN 1849-2	0.4mm
Thickness (Geotextile)	EN ISO 9863/1	1.70mm +-20%
Colour		Purple
Width	DIN EN 1848-2	1.65m +6mm/-0mm
Length	DIN EN 1848-2	61m +6mm/-0mm
Area		100 m ²
Mass	DIN EN 1849-2/ISO 9864	515g.m ²
Packaged roll weight		28.65kg
Reaction to fire	DIN EN ISO 11925-2/EN 13501-1	E
Peel resistance (180° peel)	EN ISO 8510-2	49.1 N/50mm
Water tightness @ 60kPa 24h	DIN EN 1928 – Method B	Watertight
Water tightness @ 500kPa 72h	DIN EN 1928 – Method B	Watertight
Resistance to damage – water creep at leakage	Basis of EN 12390-8	TBC
Resistance to impact	DIN EN 12691 – 350mm drop	Watertight
Resistance to Static Loading	DIN EN 12730	20kg (Pass)
Durability against thermal ageing @ 60kPa	DIN EN 1296/DIN EN1928	Watertight
Durability against chemicals @ 60kPa	DIN EN 1847/DIN EN 1928	Watertight
Durability against alkaline environment @ @ 60kPa	DIN EN 1847/DIN EN 1928	Watertight
Durability against sulphurous acid @ 60kPa	DIN EN 1847/DIN EN 1928	Watertight

QUADPROOF EVOLUTION MEMBRANE

STORAGE & SHELF LIFE

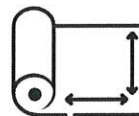
Store in an upright position, under cover and away from high temperatures and open flames. Shelf life is the lifetime of the structure, when stored and installed in line with the datasheet recommendations.

HEALTH AND SAFETY

No specific hazards are likely to arise while using any Wykamol Waterproofing Membranes or ancillaries; neither are classified as hazardous in respect to CHIP II Regulations 1999.

However, general precaution should be exercised in the use of drill etc. taking particular note of the special risk associated with working in confined spaces (basements) with restricted access/egress.

The Wykamol Group always advise the use of appropriate PPE, including gloves, hard hat, goggles, high visibility jackets and steel toe cap boots. For further information and advice, please contact the Wykamol Group Technical Department.



COVERAGE - 100M²



THICKNESS - 400mu



COLOUR - PURPLE



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Burnley Lancashire BB11 5TH

t: +44 (0)1282 473 100 e: info@wykamol.com

www.wykamol.com

Unit 3-5 Crayford Commercial Centre,
Greyhound Way, Kent, DA1 4HF

t: +44 (0)1322 318 830 e: info@tritonsystems.co.uk

www.tritonsystems.co.uk

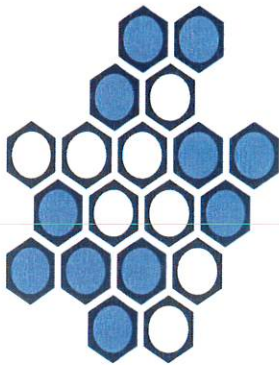
The information in this technical datasheet is given in good faith and was correct at the time of publication, but does not purport to be all inclusive. We reserve the right to update this information at any time without prior notice. All data is obtained through extensive testing in stringent laboratory conditions, however as we have no control over site conditions or work executed we accept no liability for incidental and/or consequential property damage arising out of the use of this product. The Wykamol Group's standard terms and conditions of sale apply.

FiloSeal+HD Duct Seal



Duct sealing system FiloSeal+HD is an engineered universal solution for sealing larger heavy cables and pipes in ducts, boreholes or transit frames.

Up to 2 bar Pressure Resistance
100Kg pulling Force on the cables when sealed
10xd at 45°, with 1 bar pressure bending test



Features

- Flexible, one component, adhesive and sealing compound in a cartridge - (310ml)
- Kits are complete with backing and mastic to fill an empty duct of the quoted kit size
- High levels of Gas and Water tightness
- Excellent adhesion, applicable to all common building materials
- Shows Fire resistance properties
- Resistant against Water, Alkaline, Chemical agents
- Resistant to termites (*Mastotermes Darwiniensis*) Northern Australian termites
- Resistant to Rats
- Resistant to Hydrogen Sulphide / Methane and many other Gases (NedLab)
- Non-corrosive
- Solvent-free
- Shock absorbing
- Non-toxic, neutral and almost odourless
- Also suitable for limiting the EX-zones during transitions (observe chemical resistance)
- Complies with 2011 NEC Articles 225.27, 230.8, 300.5(G), 300.7 (A) on Raceway Seals, and 501.15 (B)(2)
- Suitable for any shaped duct/borehole/opening
- WIMES Compliant (3.02 2013 6.4.3.2 b)
- Quick and easy installation
- A complete kit
- Seals all known materials, PVC & PE sheathed cables, PILC, (HD) PE pipes
- Engineering duct sealing solution
- Suitable for renovations, can be installed retrospectively
- Over 25 years of operational experience

Specifications

FiloSeal+HD Duct Seal

Density	1.2 gr/cm ³	
Pressure	up to 2 bar	
Pulling Force	100kg (1000 newtons)	
Bend Test	10xd at 45°, with 1 bar pressure	
Flow	< 2mm	ISO 7390
Colour	red-brown	
Skin over time (23C/55%RH)	± 15 minutes	
Curing	3 mm / 24 hours	
Hardness	30 shore A	DIN 53505
Elongation	100%	DIN 53504
Tensile strength	0.8 N/mm ²	DIN 53504
Operating temperature	+5°C tot +40°C	
Temperature resistance	-40°C tot +120°C	

Kits are complete with backing and mastic to fill an empty duct of the quoted kit size

FiloSeal+HD Duct Seal

More info

[Download: FiloSeal+ disclaimer](#)

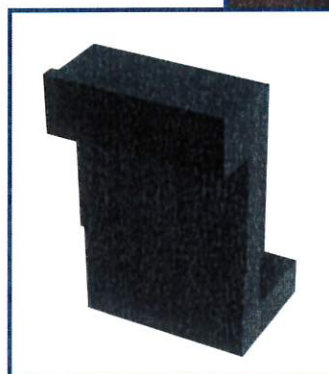
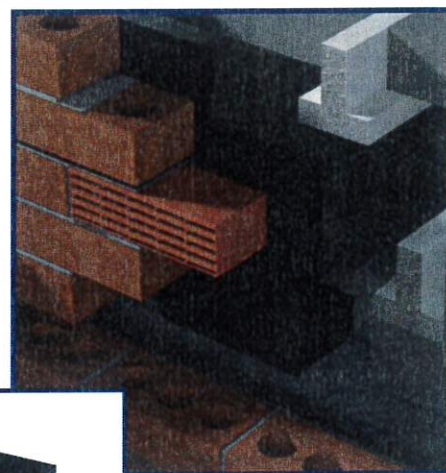
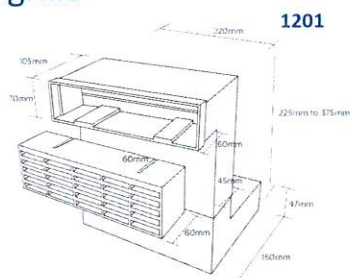
Products

Art.nr.	Product Name	Duct diameter min.-max. (mm)	Order unit
280010	FiloSeal+HD - 75mm > 110mm	Ø 110 max.	per piece
280020	FiloSeal+HD - 125mm > 160mm	Ø 160 max.	per piece
280030	FiloSeal+HD - 180mm	Ø 180 max.	per piece
280040	FiloSeal+HD - 200mm	Ø 200 max.	per piece
280050	FiloSeal+HD - 225mm	Ø 225 max.	per piece
280060	FiloSeal+HD - 250mm	Ø 250 max.	per piece

1201 telescopic underfloor vent

Adjustable ventilator for ground floors up to 5 brick courses incorporating vermin grille

Horizontal and vertical extension accessories available



Incorporates vermin grille

Use

- To provide ventilation below suspended ground floors

Features and benefits

- Telescopic and adjustable for a step of 3, 4 or 5 brick courses
- Horizontal and vertical extension accessories available
- Equivalent of 6000mm² per unit
- Special grille included to prevent entry of vermin
- Durable, robust and totally resistant to decay

Quality

- Satisfies all NHBC requirements
- Manufactured to BS EN ISO 9001 and BS EN ISO 14001
- Complies with all relevant Building Regulations
- Meets all relevant British Standards

Material and colour choice

- Manufactured by injection moulding in polypropylene
- Available in black only in packs of 20

Products in the

- 1201 telescopic underfloor ventilator
- Matching airbrick and a range of accessories - see pages 11, 13, 14 & 108

Installation advice

- Always use in conjunction with a Timloc airbrick
- The airbrick and upper front opening of the telescopic underfloor ventilator must be positioned above the finished external ground level - usually at the same level as the ground level DPC
- The lower rear opening of the product must project down to the level of the underfloor void and must not be obstructed by the floor construction. A vertical extension sleeve is available to fit with this product if the standard 5 course step is not adequate
- Building Regulations require a free airflow below suspended ground floors of at least 1500mm² per metre run of wall. This can be achieved by spacing the ventilators at 4m centres, however, such a wide spacing is not recommended as stagnant air pockets could form in the underfloor void. Timloc recommend a spacing of not more than 2m centres to comply with NHBC standards.
- The NHBC recommend that underfloor ventilators are spaced at a maximum of 2m centres, with ventilators also positioned not more than 450mm from the ends of the wall

- As a minimum requirement ventilators should be positioned down two opposite sides of the building so as to create a cross flow ventilation action. It is good practice to position ventilators around the full perimeter of the building, particularly with complex building designs
- If the underfloor void is separated by dividing walls, openings must be provided to allow a free flow of air around the underfloor void
- The standard ventilator will fit into a cavity wall with an external leaf of 100-102.5mm, a minimum cavity width of 50mm and a cross cavity of 100mm. External and internal horizontal extension sleeves are available to accommodate thicker walls or wider cavities
- To be installed with a DPC Cavity tray and wall weeps to collect any water ingress. We recommend Timloc's IL4 and 2 weeps (Invisiweep or 1143)

Bill of quantity

F30 Accessories/sundry items for brick/block/stone walling
Clause

160 | AIR BRICK

- To BS493, Class 1, built in as the work proceeds.
- Manufacturer: Timloc Building Products, Timloc House, Ozone Park, Howden, East Yorkshire, DN14 7SD. Tel: 01405 765567, Web: www.timloc.co.uk
- Reference: 1201 Telescopic Cranked Under Floor Vent (6,000mm²)
- Design: Rectangular
- Work size: Each unit 225/375mm coursing x 220mm, (6,000mm² equivalent area)
- Material: Thermoplastic
- Colour:..... Black
- Optional Accessories:.....1204 Vertical Extension Sleeve (additional 2 brick courses)
- 1205 Duct Adaptor (suits 110mm diameter duct)

Product codes

Telescopic underfloor vent

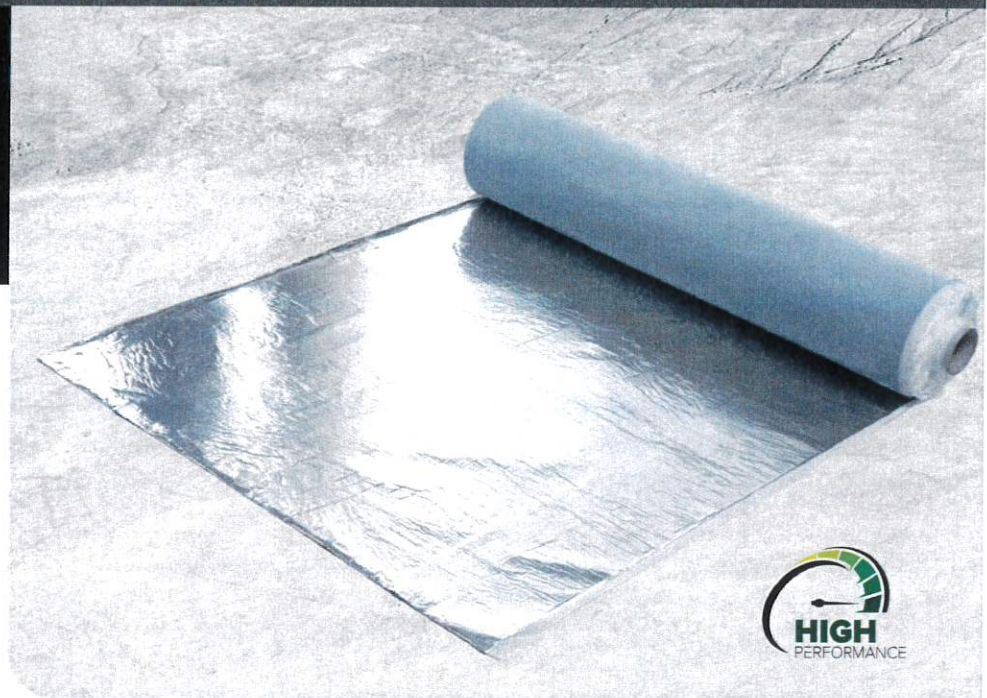
Equivalent area
6000mm²

Product code
1201

WYKAMOL GR FOIL



High performance self-adhesive bituminous waterproofing membrane that prevents Radon, Methane, Carbon Dioxide, and vapour entering the structure



Wykamol GR Foil high performance self-adhesive bituminous waterproofing membrane that prevents Radon, Methane, Carbon Dioxide, and vapour entering the structure. The polyester reinforced aluminum layer provides a robust gas protection system suitable for CS2 and above in accordance with BS8485:2015+A1:2019.

Wykamol GR Foil can you be used in below ground waterproofing applications and is classed as a Type A post-applied barrier system in accordance with BS8102:2022.

USES

- Where protection from Radon, Methane or Carbon Dioxide is required, above or below ground.
- Sealing of internal/external corners, pipe penetrations, door thresholds, window bays, and steel stanchions.
- Can be used in conjunction with **Wykamol Gas Barrier** for site specific detailing.
- Below Ground Waterproofing membrane to retaining walls, basements, lift pits, and foundations.

PHYSICAL PROPERTIES

- 1m wide rolls with no folds.
- Dimensions: 25m x 1m (25m²) Thickness: 1.2mm
- Product Colour: Silver/Black

LIMITATIONS

Do not apply in heavy rain, to wet surfaces or below 5 degrees celsius.

TECHNICAL DATASHEET

INSTALLATION

Prior to installation of **Wykamol GR Foil**, ensure the substrate is dry and clear of dust, debris, dirt and other impurities. When installing directly onto a concrete, concrete block or brick (both with flush finished pointing), apply **Wykamol Gas Primer** to the surface and allow the product to turn tacky before installing **Wykamol GR Foil**. Subject to weather conditions, **Wykamol Gas Primer** can take 30 minutes to 2 hours to become tacky / sticky.

Wykamol GR Foil should be installed by laying the rolls from the highest point of the building and working your way downwards, whilst being careful not to create counter-gradient overlaps. Ensure the release paper on the back of the membrane is removed, exposing the bituminous adhesive backing before applying the **Wykamol GR Foil**. Install black side down.

Wykamol GR Foil must be overlapped at the edges by at least 100mm (minimum). A primer is not required to stick down membrane overlaps but the membrane must be clean and dry.

Note: Post installation, ensure the membrane overlaps are pressed down firmly, whilst being very careful to ensure all air bubbles and creases are removed as pressure is placed on top of the system.

Wykamol GR Foil must be protected before being backfilled, using **Wykamol Sheet Drain**, **Wykamol CM8** or **CM20 Geotextile**, Insulation, or other protection board(s). In the event **Wykamol GR Foil** becomes damaged the membrane must be replaced or suitably patch repaired.

Wykamol GR Foil can also be cut down to seal internal/external corners, pipe penetrations, site specific detailing in accordance with NVQ Level2 Ground Gas Membrane Installation.

In accordance with NVQ Level 2 Ground Gas Membrane Installation, extra heat can be applied to improve the bonding of **Wykamol GR Foil**.

ANCILLARY PRODUCTS

- **Wykamol Gas Primer** - To prepare concrete, block, brick, steel or other non-membrane materials.
- **Wykamol Gas Barrier** - Sealing site specific detailing, such as corners, pipe penetrations and steel stanchions when used in accordance with NVQ Level 2 Ground Gas Membrane Installation.

STORAGE

Wykamol GR Foil must be stored in the original unopened package, in a dry / well-ventilated space at temperatures between +5 Degrees and 40 Degrees. Storage over 50 Degrees may lead to difficulty in removing the release protective lining of the self-adhesive material.

Wykamol GR Foil has a minimum shelf life of 12 months from the date of production.

HEALTH AND SAFETY

Please refer to **Wykamol GR Foil** MSDS for further information on health and safety.

For technical support please contact our technical team at info@wykamol.com or info@tritonsystems.co.uk.

Alternatively, please contact your local technical sales representative.



TECHNICAL DATASHEET

CHARACTERISTICS	VALUES	TEST
Thickness	1.2 mm	N 1849-1
Tensile Strength	Long. 185 N/50mm Trans. 200 N/50mm	EN 12311-1
Elongation at Break	Long. 10% Trans. 20%	EN 12311-1
Static Load Resistance	Met. A 15 Kg Met. B 20 Kg	EN 12730
Tear Resistance	Long. 45 N Trans. 45 N	EN 12310-1
Peel Resistance of Joints	80 N/50mm	EN 12316-1
Shear Resistance of Joints	Long. 220 N/50mm Trans. 260 N/50mm	EN 12317-1
Impermeability	Pass (≥ 60 Kpa)	EN 1928
Water Vapour Impermeability	Pass ($S_d \geq 1500$ m)	ISO EN 12572
Radon Transmission Rate	0.47×10^{-9} m/s	SP Swedish National
Permeability to Radon Gas	0.56×10^{-12} m ² /s	Testing & Research Institute
Permeability to Methane Gas	$<5.0\text{cc}/\text{m}^2/24\text{h}/\text{atm}$	EN 15105-1
Application Temperature	0°C * / +30°C	-
Service Temperature	-30°C / +80°C	-

* For temperatures below 5 °C, it is recommended to use special and additional precautions to facilitate adhesion (for example a specific primer for low temperatures).

TEST

Complying with: EN 13969 type A e T; EN 13970; EN 13707

Total Volatile Organic Compound emissions (TVOC): 8 µg/m³ (ISO 16000-6)

Classification for transport: Not Applicable

Reaction to fire: E (EN 13501 - 1)

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The information in this technical datasheet is given in good faith and was correct at the time of publication, but does not purport to be all inclusive. We reserve the right to update this information at any time without prior notice. All data is obtained through extensive testing in stringent laboratory conditions, however as we have no control over site conditions or work executed we accept no liability for incidental and/or consequential property damage arising out of the use of this product. The Wykamol Group's standard terms and conditions of sale apply.

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Tel: 01282 473100

e-mail: lpm@mapei.co.uk

website: www.mapei.co.uk



Agrément Certificate

25/7345

Product Sheet 1 Issue 1

QUADPROOF MEMBRANES

QUADPROOF EVOLUTION MEMBRANE

This Agrément Certificate Product Sheet⁽¹⁾ relates to Quadproof Evolution Membrane, a multilayer thermoplastic membrane for use as a damp-proof membrane (DPM) and a gas-resistant membrane to protect buildings from the ingress of moisture, radon, methane, carbon dioxide, hydrocarbons and volatile organic compounds (VOCs) from the ground.

(1) Hereinafter referred to as 'Certificate'.

The assessment includes

Product factors:

- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review



KEY FACTORS ASSESSED

- Section 1. Mechanical resistance and stability
- Section 2. Safety in case of fire
- Section 3. Hygiene, health and the environment
- Section 4. Safety and accessibility in use
- Section 5. Protection against noise
- Section 6. Energy economy and heat retention
- Section 7. Sustainable use of natural resources
- Section 8. Durability

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of issue: 11 March 2025

Hardy Giesler
Chief Executive Officer

This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation

The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 0357).

Readers MUST check that this is the latest issue of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

The Certificate should be read in full as it may be misleading to read clauses in isolation.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

British Board of Agrément

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SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that Quadproof Evolution Membrane, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	C1(2)	Site preparation and resistance to contaminants
Comment:		The product will contribute to satisfying this Requirement. See section 3 of this Certificate.
Requirement:	C2(a)	Resistance to moisture
Comment:		The product, including joints, will enable a structure to satisfy this Requirement. See section 3 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Comment:		The product is acceptable. See sections 8 and 9 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The product is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.1	Site preparation – harmful and dangerous substances
Standard:	3.2	Site preparation – protection from radon gas
Comment:		The product can contribute to satisfying the requirements of these Standards, with reference to clauses 3.1.2 ⁽¹⁾⁽²⁾ , 3.1.6 ⁽¹⁾⁽²⁾ , 3.1.7 ⁽¹⁾⁽²⁾ , 3.1.8 ⁽¹⁾⁽²⁾ , 3.2.1 ⁽¹⁾⁽²⁾ and 3.2.2 ⁽¹⁾⁽²⁾ . See section 3 of this Certificate.
Standard:	3.4	Moisture from the ground
Comment:		The product will enable a structure to satisfy the requirements of this Standard, with reference to clauses 3.4.1 ⁽¹⁾⁽²⁾ , 3.4.2 ⁽¹⁾⁽²⁾ , 3.4.5 ⁽¹⁾⁽²⁾ and 3.4.7 ⁽¹⁾⁽²⁾ . See section 3 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards – conversion
Comment:		Comments in relation to the product under Regulation 9, standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and schedule 6 ⁽¹⁾⁽²⁾ .

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23(a)(i)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)	The product is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	26(1)(b)	Site preparation and resistance to contaminants
Comment:	26(2)	The product will contribute to satisfying this Regulation. See section 3 of this Certificate.
Regulation:	28(a)	Resistance to moisture and weather
Comment:		The product can contribute to satisfying this Regulation. See section 3 of this Certificate.

Additional Information

NHBC Standards 2025

In the opinion of the BBA, Quadproof Evolution Membrane, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 4.1 *Land quality – managing ground conditions*, 5.1 *Substructure and ground bearing floors* and 5.2 *Suspended ground floors*.

Fulfilment of Requirements

The BBA has judged Quadproof Evolution Membrane for use as described in this Certificate. The product has been assessed as a DPM and a gas-resistant membrane to protect buildings from the ingress of moisture, radon, methane, carbon dioxide, hydrocarbons and VOCs from the ground.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the product under assessment. Quadproof Evolution Membrane consists of layers of linear low-density polyethylene (LLDPE), low density polyethylene (LDPE), ethylene-vinyl acetate (EVA), two core layers of ethylene vinyl alcohol (EVOH), and ethylene methyl acrylate copolymer (EMA). The product is grey or purple in colour and has the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Characteristic (unit)	Value
Thickness (mm)	0.4
Roll length (m)	61
Roll width (m)	1.65
Mass per unit area (g·m ⁻²)	385

Ancillary Items

The Certificate holder recommends the following ancillary items for use with the product, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- pre-fabricated corner units and top hats
- tapes — for sealing around penetrations and pile caps
- gas-resistant damp-proof course (DPC) — used through junctions with cavities or masonry
- Sealing strips for sealing around column penetrations.

Definitions for products and applications inspected

The following terms are defined for the purpose of this Certificate as:

- gas-resistant membrane — as defined in BS 8485 : 2015: a membrane placed above, below or within the floor slab construction to restrict methane and carbon dioxide migration from the ground into a building
- VOCs — as defined in CIRIA C748: organic compounds that are volatile under 'normal' environmental/atmospheric conditions
- VOC vapour barrier — as defined in CIRIA C748 : a barrier to a specific challenge VOC to reduce the risk associated with VOC ingress to an acceptable level.

Product assessment – key factors

The product was assessed for the following key factors, and the outcome of the assessments is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

1 Mechanical resistance and stability

Data were assessed for the following characteristics.

1.1 Mechanical properties

1.1.1 Results of tests for mechanical properties are given in Table 2.

Table 2 Mechanical properties

Product assessed	Assessment method	Requirement	Result
Quadproof Evolution Membrane	Resistance to static loading to BS EN 12730 : 2015, Method B	20 kg	Pass
	Tensile characteristics to BS EN 12311-2 : 2013	Value achieved	
	Longitudinal		409 N·(50 mm) ⁻¹
	Transverse		397 N·(50 mm) ⁻¹
	Trouser strength to BBA Test Method	Value achieved	
	Longitudinal		387 N·mm ⁻¹
	Transverse		388 N·mm ⁻¹
	Foldability at low temperature to BS EN 495-5 : 2013 -20°C	Value achieved	-20°C

1.1.2 On the basis of data assessed, the product can be punctured by sharp objects and care must be taken when handling building materials over the exposed surface.

1.1.3 Provided there are no sharp objects present on the membrane's surface prior to and during installation of the protective layer, the product will not be damaged by normal foot traffic.

2 Safety in case of fire

Not applicable.

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Weathertightness and damp-proofing

3.1.1 Results of weathertightness and damp-proofing tests are given in Table 3.

Table 3 Weathertightness

Product assessed	Assessment method	Requirement	Result
Quadproof Evolution Membrane	Watertightness to BS EN 1928 : 2000	No leakage after 24 hours exposure	Pass
	Watertightness of welded joints to BS EN 1928 : 2000	No leakage after 24 hours exposure	Pass
	Shear strength of welded joints to BS EN 12317-2 : 2010	Value achieved	360 N

3.1.2 On the basis of data assessed, the product, including welded joints, provides an effective barrier to the passage of liquid moisture from the ground.

3.1.3 The product is impervious to liquid water and provides a waterproofing layer capable of accepting minor structural movements without damage.

3.2 Resistance to chemicals

3.2.1 Results of immersion tests on a range of chemicals, including hydrocarbons and those stated within CIRIA Report C748, Clause 4.2.1, are given in Table 4 of this Certificate.

Table 4 Resistance to chemicals

Test method	Exposure chemical(s)	Requirement Loss of tensile strength/elongation	Result
BS EN 14414 : 2004, Method A	Sulfuric acid (10% solution)	MD <25% / <20% CD <25 / <20%	Pass
BS EN 14414 : 2004, Method B	Calcium hydroxide solution (saturated)	MD <25% / <20% CD <25 / <20%	Pass
BS EN 14414 : 2004, Method C	Diesel, paraffin, lubricating oil mixture	MD <25% / <20% CD <25 / <20%	Pass
BS EN 14414 : 2004, Method D	Synthetic leachate comprising a mixture of organic acids, glucose, chlorides, sulfates and phosphate	MD <25% / <20% CD <25 / <20%	Pass
BS EN 14414 : 2004	Benzene (saturated solution in water)	MD <25% / <20% CD <25 / <20%	Pass
	Toluene (saturated solution in water)	MD <25% / <20% CD <25 / <20%	Pass
	Ethyl benzene (saturated solution in water)	MD <25% / <20% CD <25 / <20%	Pass
	m,p,o-Xylenes (saturated solution in water)	MD <25% / <20% CD <25 / <20%	Pass
	Tetrachloroethene (saturated solution in water)	MD <25% / <20% CD <25 / <20%	Pass
	Trichloroethene (saturated solution in water)	MD <25% / <20% CD <25 / <20%	Pass
	Hexane (saturated solution in water)	MD <25% / <20% CD <25 / <20%	Pass
	Napthalene (saturated solution in water)	MD <25% / <20% CD <25 / <20%	Pass

3.2.2 Results of gas transmission tests for a range of VOCs are given in Tables 5 and 6.

Table 5 Transmission rates of volatile organic compounds to ISO 15105-2 : 2003, Annex B⁽¹⁾

Product assessed	Chemical	Requirement	Result	
Quadproof	Benzene	Value achieved	$\leq 0.0001 \text{ ml}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$	$0.0003 \text{ mg}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$
Evolution	Toluene	Value achieved	$\leq 0.0001 \text{ ml}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$	$0.0004 \text{ mg}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$
Membrane	Ethyl benzene	Value achieved	$\leq 0.0002 \text{ ml}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$	$0.0009 \text{ mg}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$
	Xylene	Value achieved	$\leq 0.0001 \text{ ml}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$	$0.0005 \text{ mg}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$
	Tetrachloroethene	Value achieved	$\leq 0.0001 \text{ ml}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$	$0.0007 \text{ mg}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$
	Trichloroethene	Value achieved	$>1.29 \text{ ml}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$	$>7.5661 \text{ mg}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$
	Napthalene	Value achieved	$\leq 0.0001 \text{ ml}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$	$0.0006 \text{ mg}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$
	Hexane	Value achieved	$\leq 0.0001 \text{ ml}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$	$0.0004 \text{ mg}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$

(1) Contact method.

Table 6 Measured gas transmission rates

Product assessed	Assessment method	Requirement	Result
Quadproof	Transmission rate of volatile liquid to	Value achieved	$0.099 \text{ g}\cdot\text{m}^{-2}\cdot\text{h}^{-1}$
Evolution	ISO 6179 : 2010, Method B – Diesel		
Membrane	Transmission rate of volatile liquid to	Value achieved	$2.341 \text{ g}\cdot\text{m}^{-2}\cdot\text{h}^{-1}$
	ISO 6179 : 2010, Method B - Petrol		

3.2.2 On the basis of data assessed, the product, including hot-air-welded joints, is resistant to the chemicals commonly found on construction sites.

3.2.3 Site-specific examination and assessment must be carried out to CIRIA Report C682 and CIRIA Report C716 on a case by case basis by a suitably experienced and competent individual, to establish the suitability for any specific application and the need for any additional testing.

3.3 Resistance to underground gases

3.3.1 The results of gas transmission and diffusion coefficient tests are given in Table 7.

Table 7 Measured methane, carbon dioxide and radon transmission rates

Product assessed	Assessment method	Requirement	Result
Quadproof	Methane transmission	BS 8485 : 2015	<0.1
Evolution	to ISO 15105-1 : 2007	$<40.0 \text{ ml}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$	
Membrane	Carbon dioxide transmission	Value achieved	$0.37 \text{ ml}\cdot\text{m}^{-2}\cdot\text{day}^{-1}$
	to ISO 15105-1 : 2007		
	Radon diffusion coefficient to	Value achieved	
	ISO/TS 11665-13 : 2017		
	Weld Jointed		$< 6 \times 10^{-14} \text{ m}^2 \text{ s}^{-1}$
	unjointed		$< 3 \times 10^{-14} \text{ m}^2 \text{ s}^{-1}$

3.3.2 On the basis of data assessed, the product will restrict the ingress of radon, methane and carbon dioxide into buildings from landfill and naturally occurring sources, and meets the performance criteria for a gas-resistant membrane as defined in BS 8485 : 2015.

4 Safety and accessibility in use

Not applicable.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Not applicable.

7 Sustainable use of natural resources

The product contains polyethylene, which can be recycled.

8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in the product were assessed.

8.2 Specific test data were assessed, as given in Table 8.

Table 8 Durability tests

Product assessed	Assessment method	Requirement	Result
Quadproof Evolution Membrane	Tensile characteristics to BS EN 12311-2 : 2013	Value achieved	
	Retained strength		
	20 MJ·m ⁻² UV / 50°C water spray cycles		
	Longitudinal		87%
	Transverse		102%
	Heat aged at 70°C for 84 days		
	Longitudinal		102%
	Transverse		101%
	Dimensional stability to BS EN 1107-2 : 2001	Value achieved	
	Longitudinal		-0.1%
	Transverse		0.0%
	Retained shear strength of welded joints to BS EN 12317-2 : 2010	Value achieved	
	Heat aged for 84 days at 70°C		98%
	Water aged for 56 days at 50°C		100%
	Watertightness of welded joints to BS EN 1928 : 2000	No leakage after	
	20 MJ·m ⁻² UV / 50°C water spray cycles	24 hours	Pass
	70°C for 84 days heat aged	exposure	Pass
	56 days at 50°C		Pass
	Resistance to static loading to BS EN 12730 : 2015	20 kg	Pass
	Water aged for 56 days at 50°C		

8.3 Service life

8.3.1 Under normal service conditions, the product will have a life of at least equivalent to the building in which it is installed, provided it is designed and maintained in accordance with this Certificate and the Certificate holders instructions.

8.3.2 The product will not be significantly affected by short-term exposure to ultraviolet (UV) light. However, long periods of exposure may reduce the effectiveness of the membrane and it must be protected from UV light as soon as practicable after it is installed.

Information provided by the Certificate holder was assessed for the following factors:

9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed by the BBA, against the requirements of BS 8000-0 : 2014, BS 8000-4 : 1989, BS 8485 : 2015, CP 102 : 1973 Section 3, this Certificate and the Certificate holder's instructions, and the following requirements apply in order to satisfy the performance assessed in this Certificate.

9.1.2 The design of gas and VOC protection systems must be carried out by suitably experienced and competent individuals, with sufficient knowledge of ground gas risk and the construction methods and materials.

9.1.3 The continuity of the gas protection must extend over the footprint of the building, and the product must be sealed to a gas-resistant damp-proof course (DPC).

9.1.4 Hot-air-welding specifications must be obtained from the Certificate holder, but such advice is outside the scope of this Certificate.

9.1.5 Where the construction is subject to NHBC requirements, reference must be made to NHBC NF94 *Hazardous Ground gas – an essential guide for housebuilders*.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate, the Certificate holder's instructions and, where relevant, following the relevant clauses of BRE Report BR 211 : 2023, BS 8485 : 2015, CIRIA Report C748 : 2014 and NHBC NF 94.

9.2.3 All gas membrane installations must be subject to third party validation, in accordance with BS 8485 : 2015.

9.2.4 The product can be installed in all normal site conditions, provided that the air temperature is not below -5°C, to prevent the risk of surface condensation.

9.2.5 The surface onto which the product is to be laid must be smooth, dry and free from sharp protrusions and debris that could damage the membranes. Brickwork or blockwork must be flush pointed or rendered to provide a smooth surface.

9.2.6 For chemical, gas resistance, VOC and all NHBC applications, the product must be installed with hot-air-welded joints in accordance with the Certificate holder's instructions.

9.2.7 The product must be protected as soon as possible after it is installed to minimise direct foot trafficking. Direct trafficking by vehicles must be avoided.

9.2.8 The product must normally only be installed over a surface that has a smooth finish, ie it must be free from voids, projections and mortar deposits (see section 9.2.10). Surfaces must also be dry and free from dust and frost.

9.2.9 Unless the base is smooth, a surface blinding of soft sand (or similar material) must be used to prevent puncturing during installation, or when concrete screed is being placed.

9.2.10 If the product is to be installed below a reinforced floor or concrete slab, it must be covered with a screed or protection layer prior to positioning the reinforcement.

9.2.11 If the product is installed above the slab, installation must be delayed until just before the laying of the screed or flooring, to avoid damage from site traffic.

9.2.12 The membrane is rolled out and properly aligned to the structure.

9.2.13 Each joint must consist of two 10 mm weld tracks, with a 15 mm gap between.

9.2.14 All surfaces must be dry before welding.

9.2.15 Before welding work is carried out, trials must be completed to determine the 'operating window' for the welding equipment, materials and ambient conditions. In cases of doubt, the Certificate holder must be consulted for advice, but such advice is outside the scope of this Certificate.

9.2.16 Weld overlap must be a minimum of 100 mm and must be checked for integrity after being formed.

9.2.17 All service penetrations and direction changes must be properly detailed in accordance with the Certificate holder's instructions. Service ducts must be vented to prevent the possibility of gas accumulating in confined spaces.

9.2.18 The product must be protected from UV light and mechanical damage as soon as possible after installation.

9.3 Workmanship

9.3.1 To achieve the performance described in this Certificate, installation of Quadproof Evolution Membrane must be carried out by a suitably competent groundworker installer experienced with this type of product or a contractor trained by the Certificate holder.

9.3.2 The BBA operates an Approved Installer Scheme for gas membranes; details of approved installer companies are included on the BBA website (www.bbacerts.co.uk).

9.4 Maintenance and repair

9.4.1 As the product is confined within the structure and has suitable durability, maintenance is not required. However, any damage occurring before enclosure must be repaired.

9.4.2 Any damage to the product must be repaired using a patch of the product, and laps welded. All patched areas must extend a minimum of 100 mm from the damaged area.

9.4.3 If required by the local authority, the adequacy of repair work must be confirmed by an independent validation report.

10 **Manufacture**

10.1 The production processes for the product have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and product testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

†10.2 The BBA has undertaken to review the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

11 Delivery and site handling

11.1 The Certificate holder stated that the product is delivered to site in 61 x 1.65 m rolls wrapped with film protection on pallets.

11.2 The rolls have a nominal weight of 39 kg.

†ANNEX A – SUPPLEMENTARY INFORMATION

Supporting information in this Annex is relevant to the product but has not formed part of the material assessed for the Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

UKCA marking

The Certificate holder has taken the responsibility of UKCA marking the product in accordance with Designated Standard EN 13967 : 2012.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard EN 13967 : 2012.

Bibliography

- BRE Report BR 211 : 2023 *Radon — Guidance on protective measures for new buildings*
- BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*
- BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for waterproofing*
- BS 8485 : 2015 +A1 : 2019 *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*
- BS EN 495-5 : 2013 *Flexible sheets for waterproofing — Determination of foldability at low temperature — Plastic and rubber sheets for roof waterproofing*
- BS EN 1928 : 2000 *Flexible sheets for waterproofing — Bitumen, plastic and rubber sheets for roof waterproofing — Determination of watertightness*
- BS EN 1107-2 : 2001 *Flexible sheets for waterproofing — Determination of dimensional stability — Plastic and rubber sheets for roof waterproofing*
- BS EN 12317-2 : 2010 *Flexible sheets for waterproofing — Determination of shear resistance of joints — Plastic and rubber sheets for roof waterproofing*
- BS EN 12311-2 : 2013 *Flexible sheets for waterproofing. Determination of tensile properties — Plastic and rubber sheets for roof waterproofing*
- BS EN 12730 : 2015 *Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of resistance to static loading*
- BS EN 14414 : 2004 *Geosynthetics — Screening test method for determining chemical resistance for landfill applications*
- CIRIA C748 : 2014 *Guidance on the use of plastic membranes as VOC vapour barriers*
- CIRIA C682 : 2009 *The VOCs Handbook — Investigating, assessing and managing risks from inhalation of VOCs at land affected by contamination*
- CIRIA C716 : 2012 *Remediating and mitigating risks from volatile organic compound (VOC) vapours from land affected by contamination*
- CP 102 : 1973 *Code of practice for protection of buildings against water from the ground*
- EN 13967 : 2012 + A1 : 2017 *Flexible sheets for waterproofing — Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet — Definitions and characteristics*
- ISO 6179 : 2010 *Rubber, vulcanized or thermoplastic — Rubber sheets and rubber-coated fabrics — Determination of transmission rate of volatile liquids (gravimetric technique)*
- ISO 15105-1 : 2007 *Plastics — Film and sheeting — Determination of gas-transmission rate — Differential-pressure methods*
- ISO 15105-2 : 2003 *Plastics — Film and sheeting — Determination of gas-transmission rate — Equal-pressure method*
- ISO/TS 11665-13 : 2017 *Determination of the diffusion coefficient in waterproof materials: membrane two-side activity concentration test method*

Conditions of Certificate

Conditions

1 This Certificate:

- relates only to the product that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- and any matter arising out of or in connection with it or its subject matter (including non-contractual disputes or claims) is governed by and construed in accordance with the law of England and Wales
- the courts of England and Wales shall have exclusive jurisdiction to settle any matter arising out of or in connection with this Certificate or its subject matter (including non-contractual disputes or claims).

2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product
- actual installations of the product, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to UKCA marking and CE marking.

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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