# TECHNICAL DATASHEET

# LGM

## Liquid Gas Membrane

**Styrene butadiene latex based formulated liquid applied membranes offer a simple method for waterproofing, gas proofing, damp proofing and vapour proofing applications.**


Wykamol Liquid Gas Membrane (LGM) is a single pack, elastomeric liquid rubber membrane, specifically designed for a range of vertical and horizontal construction surfaces, generally as follows. LGM will cure to form a tough, flexible material acting as an effective barrier to the passage of vapour, damp, water, radon and methane gas.

## ADVANTAGES

- Single pack system
- Water based compounds that can be applied even to damp backgrounds
- Non-toxic, non-hazardous, solvent and plasticiser free
- Quick drying. Typically touch dry in 1 hour
- Good bond to many substrates
- Toughness, high flexibility, extensibility and good crack bridging properties
- Low water vapour permeability
- Alkali resistant. Can be applied to alkaline surfaces
- Resistant to silage acids
- Non staining and stain blocking
- Available colour, Green

## TYPICAL USES

Floors, under screeds (or above screeds), basements, walls, roofs, tiling, water storage, silage storage, marking paint e.g. roads, car parks, gas barrier, stain blocker.

# APPLYING WYKAMOL LGM

### Preparation

All surfaces should be clean, free from dust, debris and loose material, oil, paint, fungal growth, etc.

Non-structural cracks, less than 0.5mm must be filled. Structural cracks must be first repaired and filled. The substrate must be sound and ideally present a smooth face. Fill holes and re-point flush to the finish using Wykamol Universal mortar to suit. Old repairs must be inspected and repaired if necessary.

New laid concrete should have a clean textured surface. Internal angles should have a 45° fillet, use Wykamol Universal mortar where required.

All construction joints, including/or day joints, angle joints, movement and expansion joints, use the Wykamol Proflex Tape system. For more information, please refer to our Proflex Tape data sheets.

The background surface should be smooth or have a light even texture. Any masonry should be flush pointed and defects in existing surfaces made good.

The surface needs to be clean, sound and free from dust, loose material or free surface water. The membrane should not be applied in wet conditions or where these conditions are likely to occur before the membrane has dried. The membrane should not be applied when the temperature of the background, or the air temperature, is below 7°C.

It is sometimes advantages to pre-wet concrete or masonry backgrounds, so that these are damp but free from any water glistening on the surface, to aid wetting out of the background.

Because of the wide variety of background types and site conditions it is always advisable to **check adhesion to the background by testing on a sample area before starting any job.**

The membrane may be applied by brush, roller or airless spray. If necessary, the compound can be diluted with up to 10% water, however care should be taken to ensure that the correct dry coat thickness is applied.

The thickness of the dried membrane per coat depends on the method of application. For a single dry coat thickness of more than 0.30mm it is recommended that the membrane be applied by airless spray. If airless spray is used single dry coat thickness of up to 1.0mm can be obtained.

**Note:** A single coat of 0.60mm dry thickness or more will require a greater drying time than for an equivalent multi-coat application.)

If two coats are being applied it is recommended that the coats be applied at right angles to each other.

Before applying the second coat it is necessary to let the first coat become touch dry. The time required to reach this tough dry condition will vary according to site conditions but will typically be in the order of 1 hour. It is preferable if the second coat is applied within 24 hours of applying the first coat. After all coats have been applied the membrane should be left for at least 4 days before attempting any ponding tests. Under unfavourable drying conditions this period may need to be extended.

Whilst most applications to concrete roofs have been successful, blistering (shortly after application of the membrane to the roof) has occasionally occurred. This blistering is caused by the heat from the sun causing a vapour pressure build up below the membrane. The problem is exacerbated if the background concrete is wet. The risk of blistering can be minimised by ensuring a very good bond to the background and avoiding application of the membrane in, or shortly prior to, strong sunlight. Techniques for maximising bond are:

Vigorously brushing the first coat into the background concrete using a stiff bristled broom.

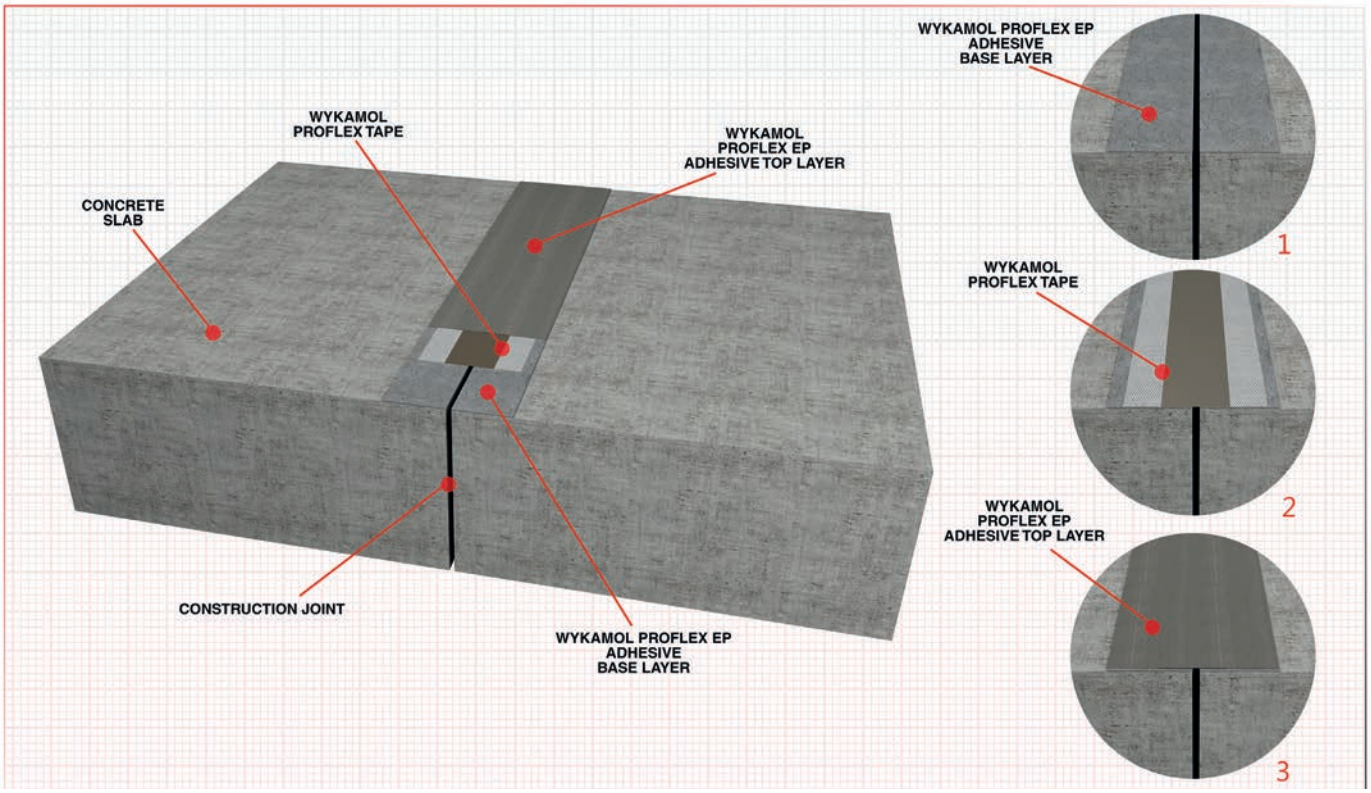
Prime the roof with a slurry of **screeding latex*** and cement. Allow this slurry to harden for 2 days before applying the membrane.

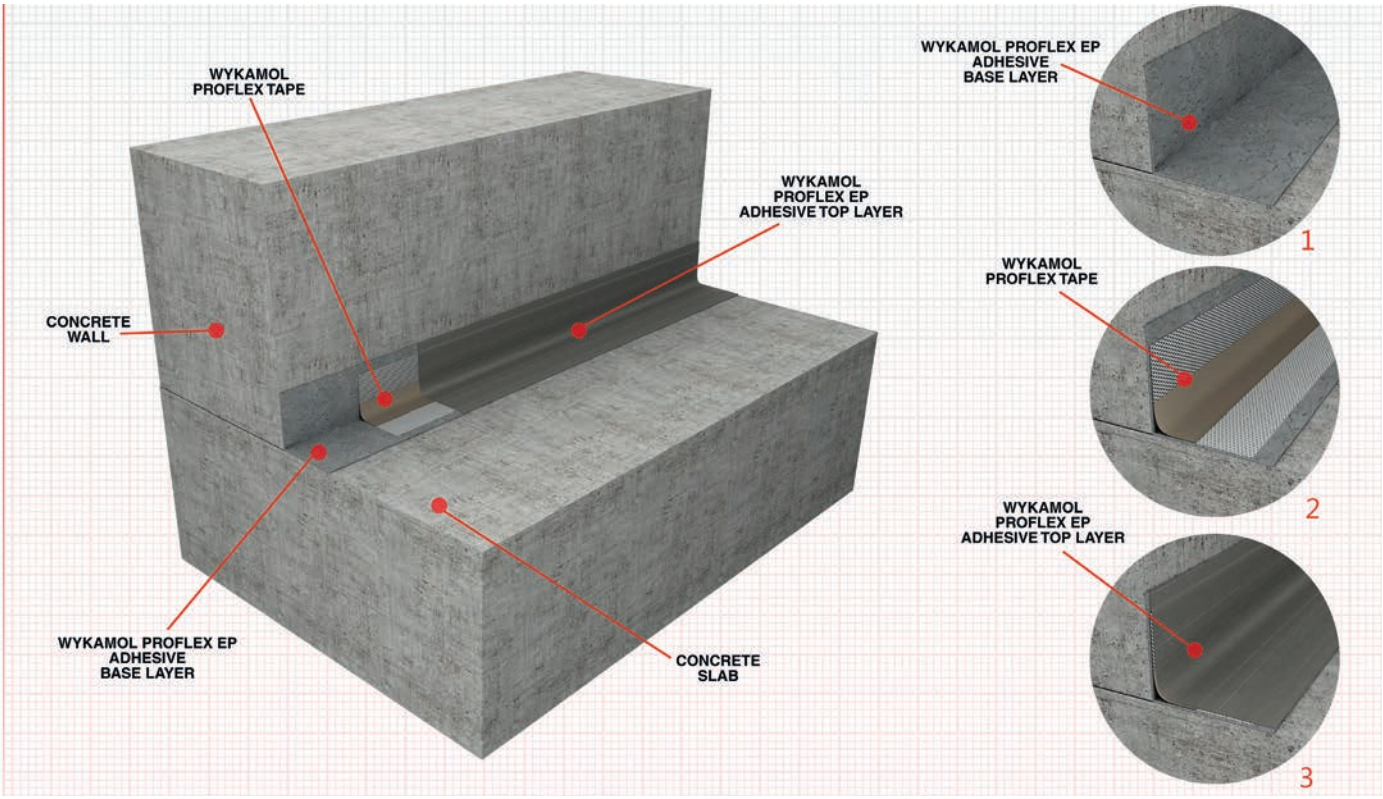
***Information on screeding latex is available on request.**

### Construction joints.

In some situations, e.g. at high stress points such as wall/floor junctions, construction, movement or expansion joints, the Wykamol Proflex Tape system should be used, please refer to our Proflex data sheets for more information and installation guidelines.

# LIQUID GAS MEMBRANE



# ADHESION OF MATERIALS ONTO THE DRIED MEMBRANE

## General

Many wet applied cementitious materials bond well to the dried Wykamol LGM, particularly if they contain polymers. When applying polymer free materials such as screed, render or plaster the highest adhesion results are obtained if the material is applied as soon as the LGM is tough dry. Alternatively, the surface of the undried LGM can be blinded with clean sharp sand or kiln dried sand to provide some mechanical key to the subsequent coating.

## Bonding agents and BS8204. Part3

In order to be classified as a bonding agent, regarding clause 5.1.2 of BS8204 Part 3 1993 "Code of Practice for Polymer Modified Wearing Surfaces", it is necessary for the slant shear strength to be above 20 N/mm2 after 28 days and for the pull-off strength to be above 2 N/mm2 after 14 days. Test results on LGM are 33 N/mm2 for slant shear (1 hour drying time for final coat of LGM, before compacting the mortar onto it.), and 1.3 – 2.1 N/mm2 for the pull-off strength. The values achieved depend to a large extent on the strength and adsorption characteristics of the background concrete. By priming the background with a slurry of screeding latex and cement bond strength above 2.0N/mm2 are more readily achievable.

## Ceramic Tile Adhesives

Most single pack ceramic tile adhesives bond well to the dried LGM coating, even after a drying period of several months. However, the longer the drying period the more opportunity there is for surface contamination. Tile adhesives that have been designed to comply with the draft European Standard for tile adhesives can be expected to have a bond strength (pull-off) to the LGM of at least 0.5N/mm2.

## Floor Screed and Renders

A floor screed/render modified with screeding latex bonds well to the dried film of LGM e.g. after allowing the LGM to dry for 8 days, applying the floor screed and allowing to cure for 9 days, a pull-off value of 2N/mm2 was achieved.

When using unmodified floor screeds/renders, enhanced bond values can be obtained by coating the dried LGM with a primer system.

## Gypsum Plasters

The membrane complies with the bond strength requirements of BS5270 Part 1 1989 regarding bonding agents for use with gypsum building plasters.

## Flooring Adhesives

Most flooring adhesives bond well to the membrane. When bonding flooring materials such as PVC sheet over the membrane two points should be considered.

- It is advisable to use adhesive/floor-covering combinations that are low in plasticiser content.
- The concrete below the membrane should be sufficiently dry, before the membrane is applied, to pass a humidity box test of the type specified in BS8203 Part 2, but with a maximum relative humidity limit of 90%

1. **Typical mechanical properties on film aged at 23˚C/50% RH:**
   Tensile strength at break = 4 N/mm2
   Elongation at break = 350%
   (Test speed at 500mm/min)

2. **Film hardness**
   Shore A hardness value of 70 was measured.

3. **Barrier properties:**
   The following data were obtained from measurements of 0.6mm thick films (dried and conditioned in air for 7 days at about 23˚C and 50% RH).

   a. Resistance to water penetration (positive head pressure)
   A 0.6mm thick dry film of the membrane, supported on a porous tile biscuit, prevented water at 0.2N/mm2 pressure from penetrating into the tile during the 24 hrs test period. This pressure is equivalent to a 20-metre head of water.

   When using the membrane on the interior of basements, the membrane should be overcoated with render, in order to prevent any hydrostatic pressure causing localised bond failure of the membrane to the background.

# LIQUID GAS MEMBRANE

b. Water vapour permeability (BS 3177)
Water vapour permeability is <4g/m2/24 hours at 25C/75% RH (using Payne cups, 0.6mm dry film thickness)

c. Methane permeability (RAPRA test)
A value of 79 mL/m2/day under a partial pressure differential of 1 bar was achieved (a comparison of the membrane data to that of low-density polyethylene film of a similar thickness indicated that the membrane is 10 times more resistance to the transmission of methane).

d. Radon test data

**Subject of the test:** wykamol M400 –based latex membrane
Testing procedure: Determination of the radon diffusion coefficient
**Test regulation:** ISO/TS 11665-13, method A
**Test execution date:** 25.11.2020 – 7.12.2020
**Test execution place:** laboratory OL124 – D2044d

## Test samples

Test samples were cut from the material handed by the client representative Stephen Abbott on 19.11.2020. The samples were registered with marks 30/20/J (1 to 4) by M. Jiránek. The dimensions of the samples were 120 x 180 mm (effective area 140.10-4 m2) and their thickness varied from 0,27 mm to 0,32 mm.

## Test method

Radon diffusion coefficient was determined according to the method A of ISO/TS 11665-13. The tested samples were placed between the source and the receiver containers. Radon diffuses through the samples from the source container, which is connected to the radon source RF 100, to the receiver containers. Concentrations on both sides of the tested samples are measured continuously by radon detectors TSR-4 of the TERA system (receiver containers) and current mode ionization chambers (source container). Radon diffusion coefficient was derived from the process of fitting the numerical solution to the curves of radon concentration measured in the receiver containers. Numerical solution is based on the one-dimensional time-dependent diffusion equation describing radon transport through the tested material.

## Laboratory conditions

Wykamol M400 – material
Steady state radon concentration in the source container: 2,3 - 0,1 MBq/m3
Maximum radon concentration in the receiver containers: 7,0 0,3 kBq/m3
Laboratory temperature: 22°C - 1°C
Relative humidity of air in the laboratory: 47% - 3%
Pressure difference between the lower and the upper containers: 1 Pa - 1 Pa

## Test device

Radon detectors TSR-4 of the TERA system (N17)
Measuring system with ionization chambers operating in current mode (N14)
Radon concentration measuring system RM-2 (N15)
Micrometer (N11)

**5. Chemical resistance – general guide only**

| Chemical | Good | Medium | Poor |
|---|---|---|---|
| Alkalies and salt solution | O | | |
| Silage | O | | |
| Dilute acid (except oxidising acids eg nitric acid) | O | | |
| Cooking oil | | O | |
| Transformer oil | | O | |
| Oxidising agents | | | O |
| Organic solvents (eg petrol, toluene) | | | O |

**5. Low temperature flexibility**
The membrane passes the severe mandrel test (BS 3900 Part E) at temperature down to 0 °C.

**6. Artificial aging**
Test carried out in a Marr Weatherometer (BS 3900 Part F3) after 2000hrs showed surface cracks which penetrated only 10% of the 0.6mm coating thickness.

No defects after 500hrs in a Xenotest 150 machine.

# TECHNICAL DATASHEET

BRITISH MADE FOR BRITISH TRADE

## COVERAGE

Liquid Gasmembrane may be applied by brush, roller or airless spray. A minimum dry coated thickness of 1.0 mm is needed to provide a gas barrier. To achieve 1.0 mm thickness, a total of 2 kg/m² is required, therefore a 15 kg tub will cover an area of 7.5 m².

## APPEARANCE

The colour of the liquid compound will differ slightly from the colour of the dried membrane. The colour shade may vary from batch to batch.

The product, as supplied, is a viscous liquid of similar consistency to thick emulsion paint. The membrane dries to form a tough semi-gloss finish.

## STORAGE

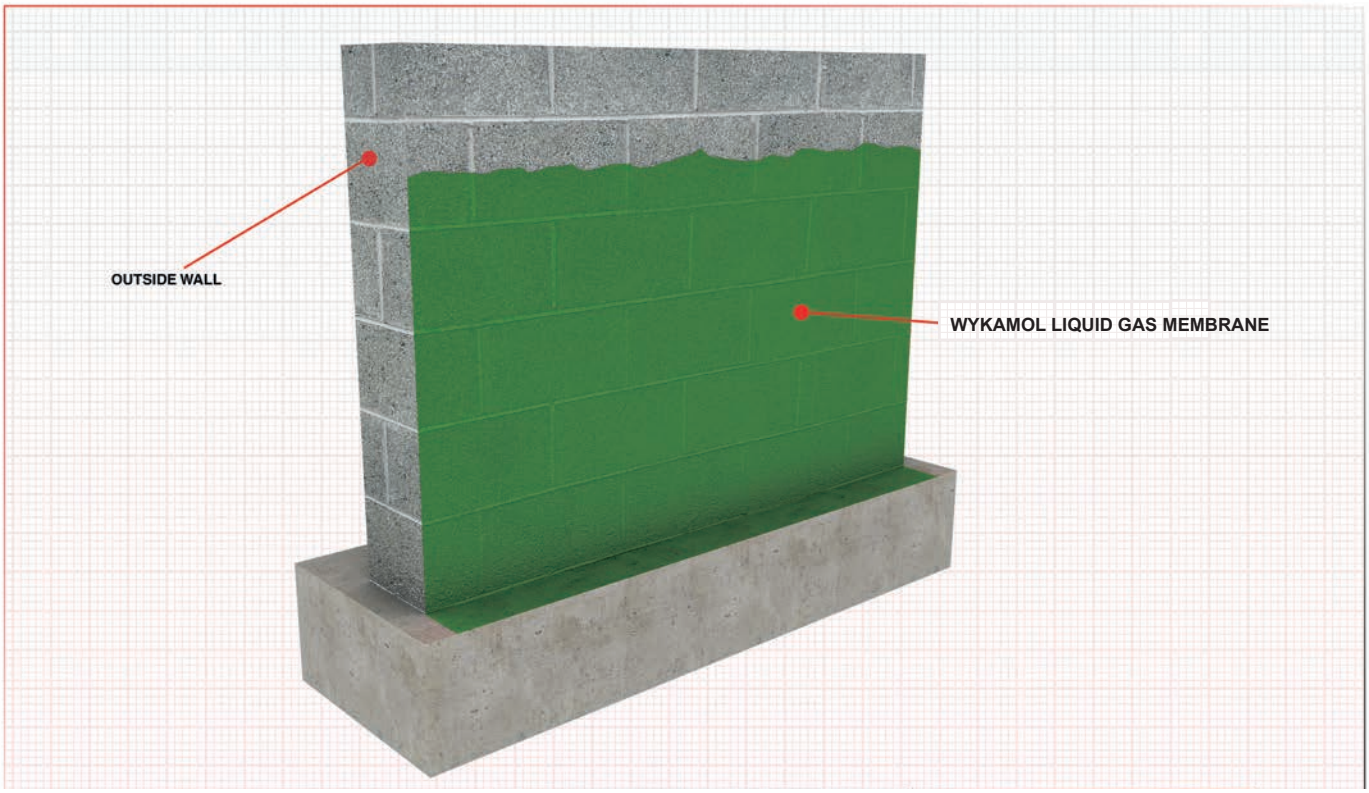
LGM should be stored in sealed container between +5°C and +35°C and protected from frost and direct sunlight.

## HEALTH AND SAFETY

For further information and advice, contact our Technical Department and consult the safety data sheet, which is available upon request or can be downloaded from our website.

## FOOTNOTES

See individual Technical Data Sheets on each of the LGM colours for information on Solids Content, pH, Viscosity, Specific Gravity and minimum Film Forming Temperature information. See Material Safety Data Sheets for each LGM colour.




Boran Court, Network 65 Business Park, Hapton,
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