



NSAI
Agrément

**IRISH AGRÉMENT BOARD
CERTIFICATE NO. 23/0437**

Hevadex bvba
Spinnerslaan 6
9160 Lokeren, Belgium
Tel: +32 9 348 31 00
Email: info@hevadex.be
Website: www.hevadex.com

**BLOWERPROOF® LIQUID and
BLOWERPROOF® LIQUID BRUSH**

Airtightness – vapour control – radon resisting membrane

NSAI Agrément (Irish Agrément Board) is designated by Government to carry out European Technical Assessments.

NSAI Agrément Certificates establish proof that the certified products are '**proper materials**' suitable for their intended use under Irish site conditions, and in accordance with the **Building Regulations 1997 and subsequent amendments**.



PRODUCT DESCRIPTION

This Certificate relates to:

BLOWERPROOF® LIQUID - A spray or roll applied airtightness membrane which may also provide a vapour control and radon membrane function.

BLOWERPROOF® LIQUID BRUSH, is the brush applied version of the product and includes premixed glass fibres for additional strength and flexibility. This product also provides airtightness and vapour control functions, but is not suitable for use as a radon barrier.

Both **BLOWERPROOF® LIQUID** and **BRUSH** products are solvent free, waterborne, polymer based coatings which dry to form a flexible elastic membrane.

In the opinion of NSAI, **BLOWERPROOF® LIQUID** and **BRUSH** products, as described in this Certificate, complies with the requirements of the Building Regulations 1997 and subsequent amendments.

USE

BLOWERPROOF® LIQUID and **BLOWERPROOF® LIQUID BRUSH** are used for the airtightness and vapour control of buildings/building elements by brush, roll or spray (spray: with airless paint spray machine) applying this product on building connections or walls depending on specifications and design.

BLOWERPROOF® LIQUID is also used to resist the ingress of radon into the building.

Readers are advised to check that this Certificate has not been withdrawn or superseded by a later issue by contacting NSAI Agrément, NSAI, Santry, Dublin 9 or online at www.nsai.ie



MANUFACTURE AND MARKETING

Hevadex bvba
Spinnerslaan 6
9160 Lokeren, Belgium
Tel: +32 9 348 31 00
Email: info@hevadex.be
Website: www.hevadex.com

MARKETED AND DISTRIBUTED IN IRELAND BY

Blowerproof Ireland.
2 Charvey Lane,
Commons,
Co. Wicklow,
A67XW92.
Tel: (0404) 61901
Email: info@blowerproof.ie

Only approved installer of BLOWERPROOF® for use
as a radon resisting membrane:
RASCOR Ireland Ltd.
Unit 4D, Ballyloughan Business Park, Arklow Road
Y25 C6T2 Gorey, Co Wexford
Phone +353 (0) 539 484 264
ireland@rascor.com
www.rascor.com

1.1 ASSESSMENT

In the opinion of NSAI Agrément, BLOWERPROOF® LIQUID and BLOWERPROOF® LIQUID BRUSH, if used in accordance with this certificate, can meet or contribute to meeting the requirements of the Irish Building Regulations 1997 and subsequent amendments as indicated in Clause 1.2 of this Agrément Certificate.

1.2 BUILDING REGULATIONS 1997 and subsequent amendments**REQUIREMENT:****Part D - Materials and Workmanship****D1 – Materials & Workmanship****D3 – Proper Materials****Part B – Fire Safety****Part B Vol 2 – Fire Safety****B3 & B8 – Internal fire spread (Structure)****Part C – Site Preparation and Resistance to Moisture****C 3 - Dangerous substances****C 4 – Resistance to Weather and Ground Moisture****Part F – Ventilation****F1– Means of ventilation****Part J – Heat Producing Appliances****J3 – Protection of Building****Part L – Conservation of Fuel and Energy****L1 – Conservation of Fuel and Energy**

2.1 PRODUCT DESCRIPTION

2.1.1 General

Both BLOWERPROOF® LIQUID and BLOWERPROOF® LIQUID BRUSH are solvent free, water-born dispersion based products, without organic solvents. They shall only be applied to substrates with a surface temperature $> 5^{\circ}\text{C}$ and $< 30^{\circ}\text{C}$ when the ambient temperature is also $> 5^{\circ}\text{C}$ and $< 30^{\circ}\text{C}$. These temperature conditions must be maintained during drying also.

BLOWERPROOF® LIQUID and BRUSH dry to form a flexible elastic membrane with strong adhesion to the substrate. Suitable substrates include concrete, masonry, bricks, blocks, plaster/render, engineered wooden boards, OSB wood, multiply timber, plasterboards, fibre cement boards, calcium silicate boards, tapes, membranes, aluminium, spray foam insulation, insulation boards (PUR, PIR, polystyrene, Rockwool®), steel and PVC.

At end of life, dried material can be disposed of as non-hazardous waste.

2.1.2 BLOWERPROOF® LIQUID

BLOWERPROOF® LIQUID is a VOC-free, liquid-applied, water-based coating that is applied by roller, airless or brush and that dries to form a flexible membrane that is used to reduce uncontrolled air infiltration from or into a building. It can also be used as a vapour control layer, or/and as part of a system to protect a building against radon from the ground.

Application consumption varies, depending on the substrate from 0.5 to 0.8 kg/m² and minimum 1 kg/m² for radon applications. The product is available in two colours: As a blue liquid (which dries to a black membrane), and white.

2.1.3 BLOWERPROOF® LIQUID BRUSH

BLOWERPROOF® LIQUID BRUSH is a VOC-free, brush applied, water-based coating that dries to form a flexible membrane that is used to reduce uncontrolled air infiltration from or into a building as well as offering a vapour control layer function.

It includes premixed glass fibres which offer additional strength and flexibility of the cured membrane. It is particularly suitable for locations where larger voids may exist, at wall intersections or at the intersection between dissimilar materials such as between the wall and sealing tapes (at window frames etc).

Consumption varies, depending on the substrate, from 0,5 to 0,8 kg/m². This product also comes in two colours: Blue (which dries to a black membrane) and white.

2.1.4 Ancillary Items

The following ancillary items are commonly used with the BLOWERPROOF® system, but are outside the scope of this certificate:

- BLOWERPROOF® BUTYTAPE (self-adhesive tape).
- PRIMER 46 (primer for BLOWERPROOF® BUTYTAPE)
- PRIMER 43: Primer to be applied on mineral surfaces, on plasterboards, or when applying in temperatures $> 25^{\circ}\text{C}$.
- PRIMER 52: primer to ensure adhesion of plaster or cement based products onto BLOWERPROOF®.
- Non-shrink gap-filling mortar/non-shrink polyurethane foam.
- Airless pump.
- Deep pile paint rollers & brushes
- Masking tapes

2.2 MANUFACTURE

The water based BLOWERPROOF® LIQUID and BLOWERPROOF® LIQUID BRUSH products are manufactured by a conventional batch-blending process. The products are packaged and delivered to site ready for use with no additional chemicals required.

The management system of Hevadex has been assessed and registered as meeting the requirements of ISO EN 9001^[1] by Bureau Veritas Certification (Certificate BE10378-1)

2.3 DELIVERY, STORAGE AND MARKING

BLOWERPROOF® LIQUID is delivered to site in 10 kg pails on pallets, with a maximum of 44 pails per pallet. Other sizes are available on request. BLOWERPROOF® LIQUID BRUSH is delivered to site in 5 kg pails on pallets with a maximum of 96 pails, or in 310ml cartridges. Other sizes are available on request.

Each pail is labelled with the product name, pack weight, company name, batch number and installation/application instructions.

The product must be stored at temperatures between 5°C and 20°C, in dry conditions and out of direct sunlight. When stored in unopened containers, in accordance with the certificate holder's instructions the product will have a shelf life of 12 months from date of manufacture. Part used containers shall be sealed by pushing firmly on the centre of the lid to expel air. Product from damaged or broken containers must never be used.

The certificate holder has taken the responsibility of classification and labelling the products under the CLP regulation (EC) No 1272/2008^[2]. Users should refer to the certificate holders relevant Data Sheets when prior to application of the products.

2.4 INSTALLATION PROCEDURE

2.4.1 Installation precautions

The certificate holders (Materials) Safety Data sheet should be consulted prior to application of the BLOWERPROOF® LIQUID and BLOWERPROOF® LIQUID BRUSH products. To satisfy the requirements of the Safety, Health and Welfare at Work Act^[3] standard PPE should be worn when using these products, to avoid direct skin and eye contact. Such building products should only be applied in well-ventilated areas. In addition, PPE including a mouth mask should also be used when applying BLOWERPROOF® LIQUID with an airless spray machine. Both the BLOWERPROOF® LIQUID and BLOWERPROOF® LIQUID BRUSH products should only be applied by installers, trained by the certificate holder and proficient in the application of the product in accordance with this certificate and the certificate holders Application Manuals.

2.4.2 Site inspection and preparation

Before commencing work, the installing operative must ensure that the property has been correctly surveyed and is suitable for the application of the product. This review is performed using the BLOWERPROOF® Site Survey documentation. The BLOWERPROOF® applicator Pre Job Checklist should also be completed to record installation details including material requirements, equipment, safety and paperwork checks.

Successful application of the products depends on thorough preparation of the substrate including the following:

- All standing water, dust and free particles shall be removed with a vacuum cleaner. BLOWERPROOF® LIQUID (BRUSH) may be applied to humid/damp surfaces, but all such surfaces must be hand-dry as described in the certificate holders application manuals.

- The ambient and substrate surface temperature during application and drying must be > 5°C and < 30°C. Substrate temperature to be verified with a surface temperature meter.
- All holes and gaps bigger than 2mm shall be filled with non-shrink gap-filling mortar, non-shrink polyurethane foam or the thixotropic paintable sealant BLOWERPROOF® LIQUID BRUSH (for gaps up to 5mm only). When using polyurethane foam to fill gaps, excess can be removed before applying BLOWERPROOF®.

2.4.3 Movement Joints & Non-standard applications

For all applications where movement may occur post-installation, such as in wooden roof constructions and building foundations (due to settlement), the following additional preparation is required. BLOWERPROOF® BUTYTAPE shall be applied over the joint which is then overcoated with BLOWERPROOF® LIQUID. To ensure optimal adhesion of BLOWERPROOF® BUTYTAPE, PRIMER 46 should first be applied by low pressure spray, roller or paintbrush and let dry (time varies according to environmental conditions, typically 12-24 hours) prior to application of the BLOWERPROOF® BUTYTAPE. The applied tape shall then be rolled with a pressing roller to ensure it is securely bonded to the substrate.

2.4.4 Product application

Installation/Application of the BLOWERPROOF® products shall be carried out by applicators who have been approved and trained by the Certificate holder.

The certificate holders Installation Checklist shall be completed as work progresses to record details of the application including pre installation checks performed (site conditions: surface & ambient temperature, humidity etc.), material checks (including sq. sprayed, thickness, product batch number etc.) and general installation details including elements to be coated, products to be used, safety precautions taken etc.

2.4.4.1. Application of BLOWERPROOF® LIQUID – General

BLOWERPROOF® LIQUID has been assessed for the following applications

- **As an airtightness membrane**
- **As a vapour control layer**
- **As a radon resisting membrane**

Once opened, the pail of BLOWERPROOF® LIQUID should be mixed to homogeneous consistency with a handheld paddle mixer at low speed. The product shall be applied using an airless spray machine (Graco/Airlessco Sprayer, or equivalent), or alternatively a long-haired roller or brush suitable for water-based acrylic paints.

BLOWERPROOF® LIQUID shall be applied in two layers: total minimum consumption should be min. 0.5kg/m² or 400 microns (min. thickness) to be verified with a thickness gauge, (see Cl. 2.4 6).

Note: When using BLOWERPROOF® LIQUID as radon resisting membrane, consumption must be minimum 1.0 kg/m² (min thickness 830 microns).

During the drying process, BLOWERPROOF® LIQUID will change color from blue to black. A minimum five day period should be given prior to application of the final specified finish.

BLOWERPROOF® LIQUID is also available in white color. This product type does not show a color change when drying. Hence, a minimum drying time of 5 days should be assumed, depending on humidity, (lack of) ventilation and surface temperature (based on wet layer thickness – WLT – of 0,5 to 1 kg/m²).

The second layer is applied after the first layer is touch dry. The second layer is applied maximum 5 days after application of the first layer.

When using the airless spray machine for the application of BLOWERPROOF® LIQUID, the product shall be sprayed at 20 to 30cm from the surface and at a 90° angle on the surface, to minimize overspray. Layer thickness (local) of > 1500 micron should be avoided.

Final applied thickness shall be verified with a wet film thickness gauge for each layer, to ensure minimum total coverage of min. 400 microns (or 830 microns for radon applications).

The product shall be applied over an area sufficient to overlap finish plaster or render by 50mm and in all cases a minimum of 50mm above DPC at ground level.

2.4.4.2. Application of BLOWERPROOF® LIQUID BRUSH – General

BLOWERPROOF® LIQUID BRUSH has been assessed for the following applications:

- **As an airtightness membrane**
- **As a vapour control layer**

No mixing of the BLOWERPROOF® LIQUID BRUSH product is required before application. This product shall be applied with a flat synthetic bristle paintbrush. Consumption shall be 0.5kg/m² to 1kg m² to produce a final thickness of circa 400 to 830 microns (gives 240/500 micron dry), to be verified with a thickness gauge (See Cl. 2.4.6).

The product shall be smear applied rather than painted to obtain a closed membrane over the substrate. The product is therefor scooped from the pail and smeared to ensure all voids in the substrate are filled. As for the BLOWERPROOF® LIQUID product, local layer thickness of > 1500 micron must be avoided.

The product shall be applied over an area sufficient to overlap finish plaster or render by 50mm and in all cases a minimum of 50mm above DPC at ground level.

Curing times are similar to that for BLOWERPROOF® LIQUID with the product turning black when fully dried out. BLOWERPROOF® LIQUID BRUSH is also available as white with a curing time of 5 days based on a wet layer thickness application/consumption of 0.5 to 1.0 kg/m².

2.4.5. General precautions

The following issues/cautions should be considered when using the BLOWERPROOF® LIQUID or BLOWERPROOF® LIQUID BRUSH product.

- BLOWERPROOF® LIQUID BRUSH shall never be applied while the substate is under test pressure. Airtightness pressure testing shall only be carried out once the product has fully cured.
- BLOWERPROOF® LIQUID has been assessed and is suitable for use as protection against radon. The brush type (BLOWERPROOF® LIQUID BRUSH) however is not suitable for protection against radon.
- These products shall not be used on a polluted, friable or dusty substrate nor a substrate with standing water.
- These products should not be used to fill joints and openings > 5mm. Such joints shall be filled with non-shrink gap-filling mortar, or non-shrink polyurethane foam prior to the application of the BLOWERPROOF® products.
- The BLOWERPROOF® products shall not be diluted with water or solvents and contact with any type of liquid during drying shall be avoided.
- The BLOWERPROOF® container shall remain closed at all times when not in use.
- No heat source at close range shall be used to aid drying.
- In case of damage to the BLOWERPROOF® coating after drying, the area can be restored by sanding and cleaning the surface of the coating with water and a lint-free cloth and re-applying an additional layer of the product.
- Reference should be made to the recommendations of SR54^[19] for all dwelling retrofit applications of the BLOWERPROOF® products.

2.4.6. Thickness measurement

The thickness of the applied BLOWERPROOF® products shall be verified with a wet film thickness gauge for each layer, to ensure final minimum total coverage of 400 microns (830 microns for radon applications) is achieved. This will correspond to a cured final thickness of 240 microns (500 microns for radon applications).



Figure 1: Wet Film Thickness Gauge

A wet film thickness gauge (see Figure 1) is used for this purpose as follows:

- Level and smooth patches/locations of substrate coated with BLOWERPROOF® should be identified.
- The appropriate side of the thickness gauge for thicknesses of circa 400-1000 microns should be selected.
- The appropriate side of the gauge is pressed into the wet film immediately after application.
- The gauge should then be removed, and the underside of the comb fingers inspected.
- The last wetted finger indicates the wet film thickness value printed by this finger.
- This process shall be repeated to make a number of spot checks - at least one measurement should be taken for each 5m² of the coating.
- After use, the gauge shall be cleaned with water.

The final applied cured film thickness can be checked and confirmed using a dry film thickness meter as shown in Figure 2, with additional application of the product if minimum thicknesses are not achieved.

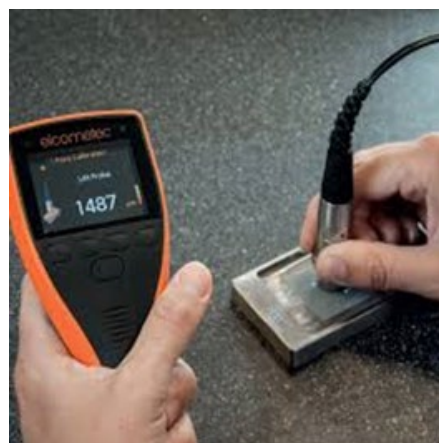


Figure 2: Dry Film Thickness Meter

Final measurements shall be recorded in the BLOWERPROOF® Installation Check sheet. The installer should also record average applied thickness in the BLOWERPROOF® Installers Declaration along with other installation details including:

- Installers Details (Company and applicator details)
- Product Details (product used)
- Installation Site Details (building type, areas treated, quantity of product used, average depth achieved etc).
- Installation date and signature of installer.

A copy of the BLOWERPROOF® Installers Declaration is presented to the homeowner (main contractor on completion of the installation) with a copy retained by the installer as an installation record.

2.4.7. Application specific instruction

The following outlines application guidance depending on the specific application of the products.

2.4.7.1. Internal wall application

These instructions apply for application of BLOWERPROOF® as airtightness and/or vapour control layer on the internal side of the internal wall - where the insulation is applied to the outer side of that wall (i.e. Cavity Wall). Internal wall referenced here relates to the internal leaf of the external perimeter wall of the building.



Figure 3: Application of BLOWERPROOF® onto walls.

- BLOWERPROOF® LIQUID is spray and/or roll applied on the inside of brick walls (see Figure 3) taking into consideration the general guidelines for applying this product. Multiple passes may be required to achieve the required minimum wet thickness.
- After curing, plasterboards can be fixed onto the BLOWERPROOF® layer by standard dot & dab techniques using PRIMER 52, See Figure 4. Alternative finished may be used as approved by the certificate holder.



- 1- Concrete blocks
- 2- Insulation
- 3- PRIMER 43
- 4- BLOWERPROOF® LIQUID
- 5- PRIMER 52
- 6- Dot & Dab
- 7- Plasterboard.

Figure 4: Application of Plasterboard post BLOWERPROOF® system application and curing.

2.4.7.2. Application to the external side of an internal wall.

These instructions apply for application of BLOWERPROOF® as airtightness and/or vapour control layer on the external side of the internal wall (prior to the installation of insulation panels and facade system). Internal wall referenced here relates to the internal leaf of the external perimeter wall of the building.

- BLOWERPROOF® LIQUID is spray and/or roll applied in two coats (ensuring that the first coat is fully dry before applying the second coat) on the outside of brick walls taking into consideration the general guidelines for applying this product.
- After drying, insulation boards are fixed onto the BLOWERPROOF® layer by gluing or anchoring. The advice of the certificate holder should be sought for suitable anchors.

Note: The BLOWERPROOF® product shall always be installed/applied to the warm side of the insulation layer.

Cavity barriers and other relevant requirements of Section 3 of the TGD to Part B of the Building Regulations 1997 and subsequent amendments must be considered when using the BLOWERPROOF® products for this application.

2.4.7.3. Application at penetrations and abutments.

Prior to applying BLOWERPROOF® LIQUID BRUSH, at penetrations (e.g. around pipes) and abutments, expanding polyurethane foam shall be applied around the pipe, which should be cut off after hardening, on level with the substrate face. BLOWERPROOF® LIQUID BRUSH shall then be applied in two coats, ensuring that the first coat is fully dry before applying the second coat. See Figure 5.

Any duct/pipework passing through a fire barrier must be appropriately fire stopped in accordance with the requirements of Section 3.3 of TDG B 2006 and 3.7 of TGD B Vol 2 2017 to the Irish Building Regulations.

2.4.7.4. Airtightness of floor to wall connections.

When using spray or hand applied (airtight) plaster as a finish on the internal side of the internal wall, the general installation guidelines for applying the BLOWERPROOF® LIQUID and BLOWERPROOF® LIQUID BRUSH products shall be used for applications at floor to wall junctions. See Figure 7.

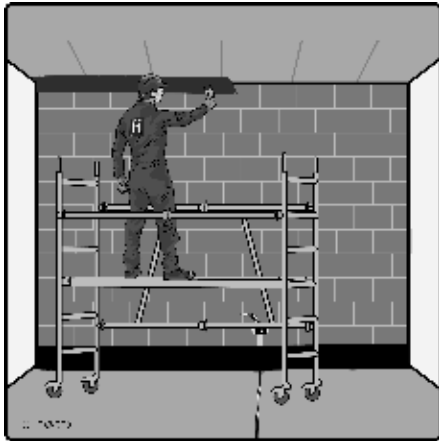


Figure 6: Application of BLOWERPROOF® At wall to ceiling connection.

At ground floor locations, any protruding DPC shall be trimmed back level with the wall. Although BLOWERPROOF® LIQUID (BRUSH) may be applied to humid surfaces, all standing water should first be removed.

All gaps greater than 5mm (including those around joints, pipes, cables, ducting, joists and all other penetrations) shall be filled using non shrink gap filling mortar or alternative non-shrink polyurethane foam.

The BLOWERPROOF® product shall be applied over an area sufficient to overlap finish plaster or render by 50mm and in all cases a minimum of 50mm above DPC at ground level. When using BLOWERPROOF® only for the floor to wall connection, the airtightness is ensured by the combination of BLOWERPROOF® with spray or hand applied plaster render which is applied afterwards with a minimum 50mm overlap. A minimum overlap of 500mm shall be maintained when connecting interior walls to outer perimeter walls.



Figure 5: Application of BLOWERPROOF® at pipe penetration.

BLOWERPROOF® LIQUID should be applied by airless pump and roller for larger areas to be coated.

BLOWERPROOF® LIQUID (BRUSH) shall be applied in two coats ensuring that the first coat is fully dry before application of the second coat.



Figure 7: Application of BLOWERPROOF® at floor to wall junctions.

2.4.7.5. Airtightness of wall to Ceiling connections

When using spray or hand applied (airtight) plaster as finish on the internal side of the internal outer perimeter wall, gaps bigger than 5mm shall first be filled with non-shrink gap-filling mortar or non-shrink polyurethane foam (which should be cut off after hardening, flush with the surface). BLOWERPROOF® LIQUID or BLOWERPROOF® LIQUID BRUSH shall then be applied in two coats ensuring that the first coat is fully dry before applying the second coat. (Figure 6).

2.4.7.6. Airtightness of wall chases

Gaps bigger than 5mm (or 2mm when using BLOWERPROOF® LIQUID) shall be filled with non-shrink gap-filling mortar or non-shrink polyurethane foam (which should be cut off after hardening to flush with the surface). BLOWERPROOF® LIQUID or BLOWERPROOF® LIQUID BRUSH shall be applied in two coats ensuring that the first coat is fully dry before applying the second coat.

2.4.7.7. Airtightness of window jamb

When using spray or hand applied (airtight) plaster as a finish on the internal side of the internal perimeter wall, all gaps bigger than 5mm around the window frames shall first be closed with non-shrink polyurethane foam.

Masking tape shall be applied on the window profiles leaving approximately 5mm of the frame exposed adjacent to the wall. BLOWERPROOF® LIQUID BRUSH should then be applied in one layer verifying complete coverage. The masking tape should then be immediately removed after application of the BLOWERPROOF® LIQUID BRUSH product. (Figure 8).

2.4.7.8. Air Permeability

Where required, air permeability pressure tests shall be performed in accordance with the requirements of the requirements of Section 1.5.4 of TDG L to the Irish Building Regulations.

2.4.7.9. Radon applications

BLOWERPROOF® LIQUID also functions as ready-to-use liquid applied seamless membrane which resists the ingress of Radon gas and can be used as part of a radon resistant design for a building. Reference should also be made to BRE Report BR 211^[25]. BLOWERPROOF® LIQUID is applied by spray, roller or brush.

Note: "BLOWERPROOF® LIQUID BRUSH", also part of this certification, is NOT suitable for applications as radon sealer.

BLOWERPROOF® LIQUID is suitable for use on solid and closed floor and wall surfaces, such as concrete and brick surfaces. BLOWERPROOF® LIQUID can also be applied on high density insulation panels (PUR, PIR, polystyrene, Rockwool®). BLOWERPROOF® LIQUID is not suitable for use over hardcore or soil. See Figures 9, 10 and 11 for typical Radon applications.

It is the task of the specifier to evaluate whether BLOWERPROOF® LIQUID can be used as radon membrane in specific floor/wall buildup, depending on the design, to meet the requirements of TGD Part C, including:

- New build using BLOWERPROOF® LIQUID applied to the sub structure which will ease the build ability of complex ground structures and enhance the radon protection of new buildings.
- Retrofit , where a membrane exists in the wall which can be linked to BLOWERPROOF® LIQUID applied membrane (to bring radon to the outside of the building, as per best practice.
- In retrofit situations, where there is no membrane in the wall. In such situations, it is the responsibility of the designer (Assigned Certifier) to ensure the overall radon tightness of a building as BLOWERPROOF® Liquid will ONLY resist radon ingress on the surfaces where the product is installed.

Only RASCOR Ireland Ltd. are approved to install BLOWERPROOF® for use as a radon resisting membrane.

Surface preparation:

All standing water, dust and loose debris shall be removed with a vacuum cleaner. All holes and gaps (including those at penetrations through the floor) shall be filled with a non-shrink gap filling mortar or non-shrink polyurethane foam to ensure BLOWERPROOF® Liquid is applied on a closed and solid surface. When using polyurethane foam, all excess material shall be cut off flush with the substrate after hardening. PRIMER 43 shall be applied to all mineral surfaces and on plasterboards, or when applying at temperatures



Figure 8: Application of BLOWERPROOF® window locations.

> 25°C.

Application:

BLOWERPROOF® Liquid shall be applied with a minimum of two passes/coats to arrive at a total minimum consumption of 1kg/m², corresponding to a 830 microns wet layer thickness. BLOWERPROOF® LIQUID can be overcoated with the second layer, only when the first layer is touch-dry. The applied layers can not be considered fully cured until five days have elapsed. The thickness of each applied layer is to be verified with a wet film gauge (See Figure 1), or alternatively, the total of all layers applied to be confirmed by measurement using a dry film thickness meter such as "Elcometer 500" (see figure 2).

Special care needs to be taken at all penetrations through the floor and wall surfaces on which BLOWERPROOF® Liquid needs to be applied, ensuring that the BLOWERPROOF® Liquid is applied in an even layer, avoiding local thicknesses exceeding 1500 microns.

BLOWERPROOF® Liquid is not suitable for use to extend through a surface (i.e wall) to the outside of the building. For areas where this is required, other fit for purpose materials need to be used. The BLOWERPROOF® Liquid applied membrane shall be overlapped (minimum 100mm overlap) with the existing radon membrane layer to ensure one continuous sealed membrane is achieved. The Certificate holder shall be contacted to check bond compatibility between the BLOWERPROOF® Liquid product and the existing radon membrane as required.

A minimum of five days should be allowed prior to applying any finish on the BLOWERPROOF® layer. Flexible paints, spray plaster/render or plasterboards fixed with the dot&dab technique are all considered suitable as finishes for the walls.

Insulation boards can be fixed directly onto BLOWERPROOF® LIQUID using glue or mechanical anchors. Suitable floor finishes include selflevelling screeds or glued tiles. When applied on a floor surface, the BLOWERPROOF layer should be covered as soon as possible to prevent foot traffic damage, but respecting the five days minimum drying time. Care must also be taken that the BLOWERPROOF® layer is not damaged when installing the screed or other finish. Nonflexible paints/coatings are not suitable for application onto the cured BLOWERPROOF® products. The certificate holder can be contacted as required regarding the suitability of any specific products for finishing.

2.4.8. Repair

Any damaged coating must be repaired prior to enclosure. The area can be restored by lightly sanding and cleaning the surface of the coating with water and a lint-free cloth and re-applying an additional layer of the product.

Table 1 Blowerproof® Liquid - Radon application characteristics	
Sprayed wet film thickness (mm)	0.83
Density(kg/litre)	1.2
Consumption (kg/m ²)	1
Solid content in weight	0.59
Solid content in volume dry film	50.8
Dry film thickness (mm)	0.5
R _{RN} (S/M)	156.10 ⁶
T _{RN} (M/S)	6,4.10 ⁻⁹

- 1 External Ground Level
- 2 XPS Insulation (by others)
- 3 Radon Cavity Tray
- 4 Radon Sealing Tape
- 5 EPS Insulation (by others)
- 6 Retaining RC Wall
- 7 Radon Proof Injection Channel (by approved installer)
- 8 Radon Proof AY108 resin (by approved installer)
- 9 Primer 43 to concrete surfaces before Blowerproof® Liquid Membrane is applied
- 10 Blowerproof® Liquid Membrane
- 11 Insulated Plasterboard mechanically fixed as per specification (*Alternate application with dot and dab - use Primer 52)
- 12 Mortar Fillet (by others)
- 13 Rigid Insulation (by others)
- 14 Screed (by others)

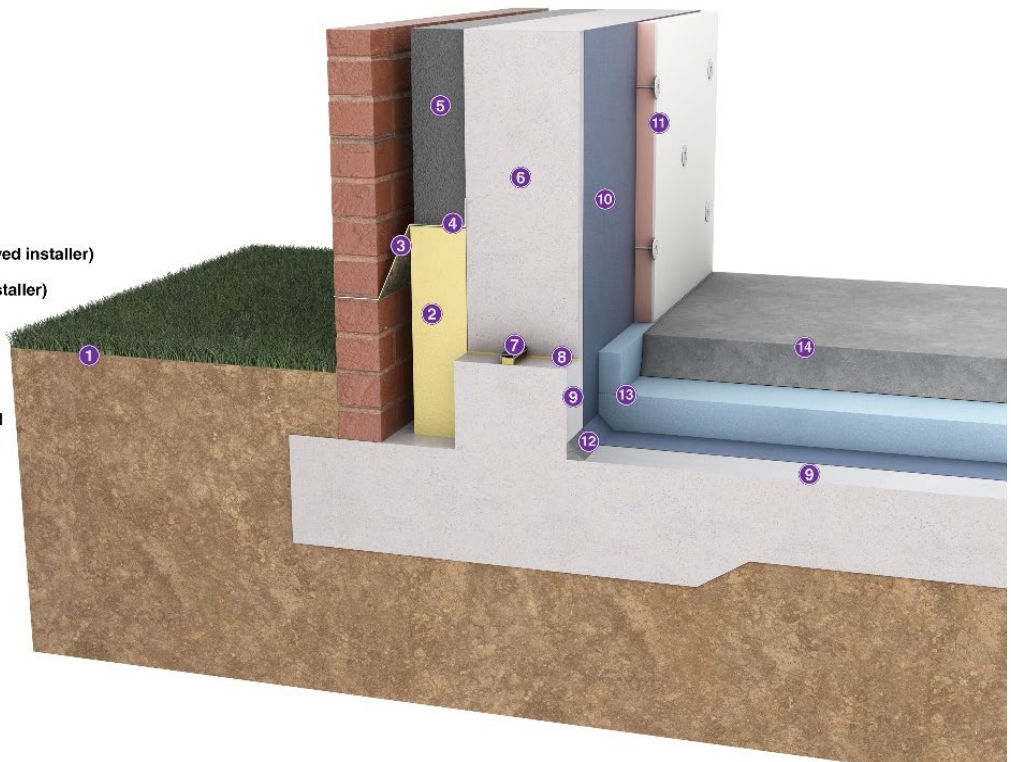


Figure 9: Radon detail at Base of wall – Reinforced Concrete

- 1 XPS Insulation (by others)
- 2 Radon Cavity Tray
- 3 EPS Insulation (by others)
- 4 Blowerproof® Liquid Membrane
- 5 Insulated Plasterboard mechanically fixed as per specification (*Alternate application with dot and dab - use Primer 52)
- 6 Screed
- 7 Rigid Insulation
- 8 Mortar Fillet (by others)
- 9 Internal floor level
- 10 Primer 43 to concrete surfaces before Blowerproof® Liquid Membrane is applied

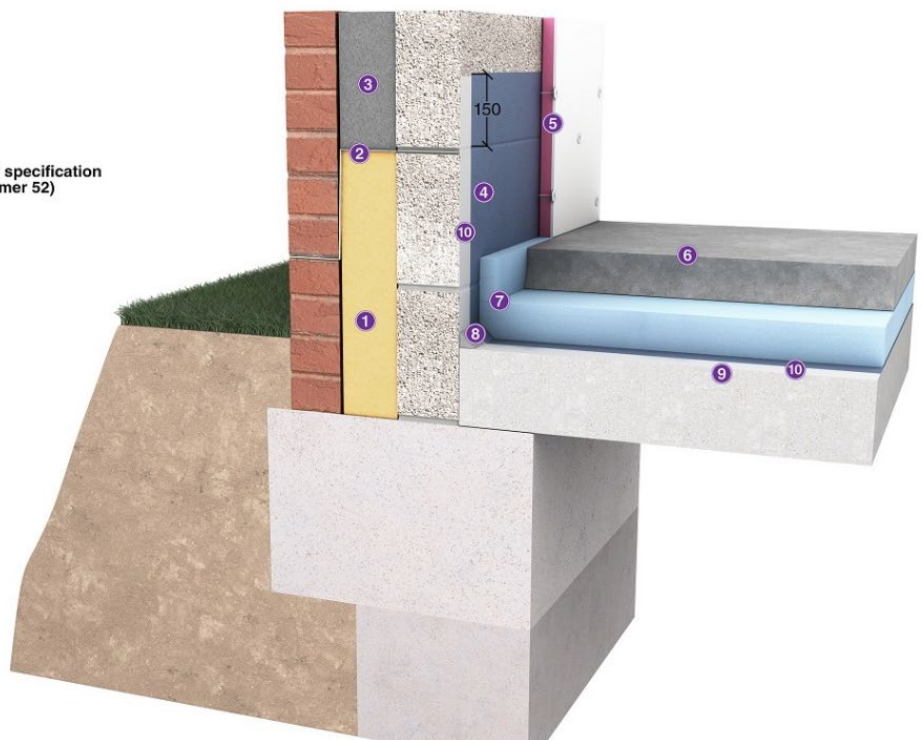


Figure 10: Termination of radon resisting membrane at ground level

- ① Retaining wall of concrete or masonry
- ② Primer 43 to concrete surfaces before Blowerproof® Liquid Membrane is applied
- ③ Radon Proof Injection Collar (by approved installer)
- ④ Paintable acrylic sealant
- ⑤ Blowerproof® Liquid Membrane
- ⑥ Protrusion through RC Wall

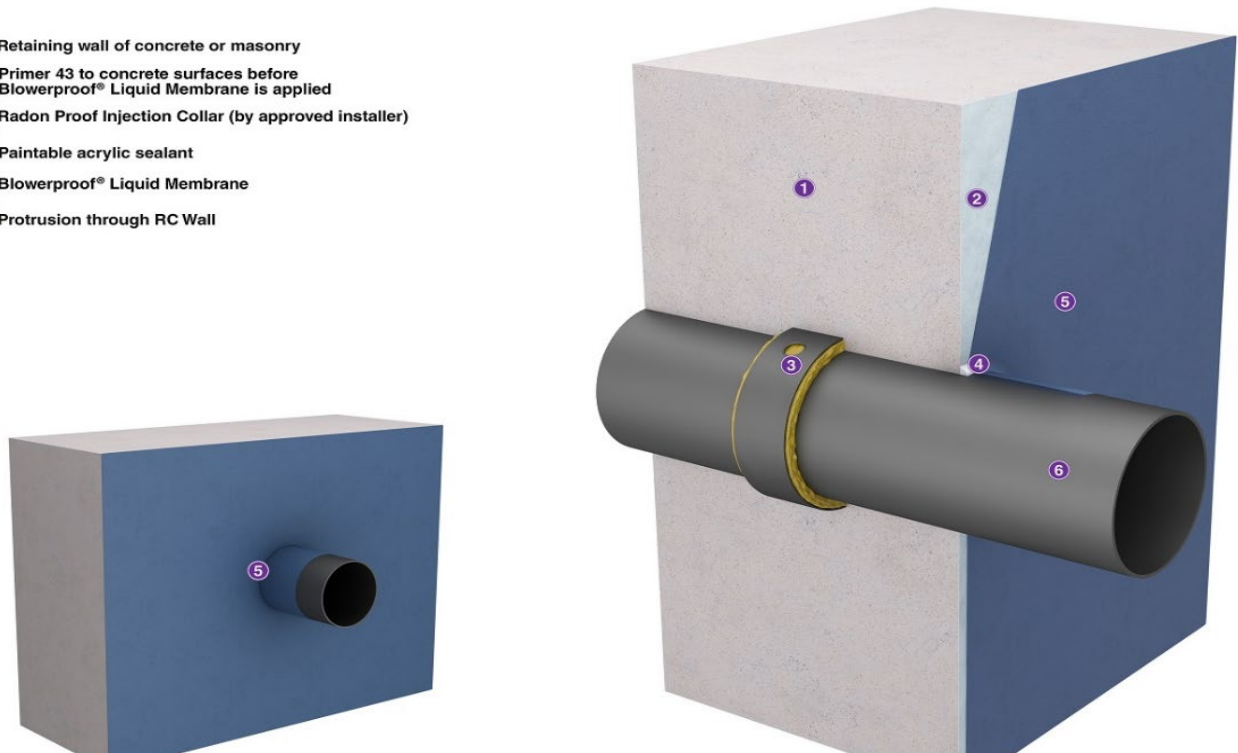


Figure 11: Reinforced Concrete- Wall Penetration Detail

3.1 GENERAL

The BLOWERPROOF® Liquid and BLOWERPROOF® Liquid Brush systems are satisfactory for use internally as a membrane to reduce uncontrolled air infiltration from or into a building. The BLOWERPROOF® products also function as a vapour control membrane.

BLOWERPROOF® LIQUID is capable of resisting the ingress of radon into the building when used as described in this certificate. (BLOWERPROOF® LIQUID BRUSH is not suitable for use as a Radon resistant membrane.

3.2 PRODUCT APPLICATIONS

BLOWERPROOF® products have been assessed for use in the following applications (see CI 2.4.7 of this certificate):

1. Applied to the external side of the internal wall (prior to the installation of insulation panels/ façade system) to act as an airtightness and vapour control layer.
2. Applied on the internal side of the Internal wall, to act as an airtightness and vapour control layer, where the insulation is applied to the outer side of that wall i.e. when the cavity is filled with either insulation beads, rigid boards, etc (Cavity wall).
3. Applied on the internal side of the Internal wall, to act as an airtightness and vapour control layer, where the insulation is applied to the outer side of that wall (Cavity wall), and whereby the internal side is finished with an insulation board.
4. Applied on the internal side of the Internal wall, whereby BLOWERPROOF® is applied to the insulation or the concrete block wall (on the warm side of the insulation), to act as an airtightness and vapour control layer.
5. Applied on floor to wall connections, wall to roof connections and window frame to wall connections, to be finished with plaster (airtight), at required thickness to achieve airtightness.
6. Applied around penetrations and abutments e.g. wires and pipes.
7. Applied direct over polyurethane spray foam or rigid insulation boards where vapour control is required.
8. Applied to floors or walls as part of a radon protection system.
9. Applied to plaster board to provide an airtight or vapour control function.

Internal wall referenced above relates to the internal leaf of the external perimeter wall of the building.

In all situations, the dried out BLOWERPROOF® membrane must be covered by a suitable finish. Possible suitable finishes include plasterboards fixed on to the BLOWERPROOF® membrane by the dot & dab technique, insulation panels fixed onto the BLOWERPROOF® membrane, flexible UV resistant paint, plaster, floor screeds or enclosed internal linings. The Certificate holder must be consulted for suitable compatible finishes where doubt exists.

3.3 DESIGN CONSIDERATIONS

- A condensation risk analysis shall be carried out prior to the use of BLOWERPROOF® products.
- It is the responsibility of the designer to ensure the overall radon protection of a building when using BLOWERPROOF® for this purpose. When used in Gas protection applications in or over floor slabs, the product shall always be joined to a compatible radon gas resistant cavity tray damp proof course to ensure that the whole footprint of the building, including cavities, are protected to meet the requirements of TGD Part C to the Irish Building Regulations.
- Buildings in areas at risk from Radon should be constructed in accordance with the recommendations of BRE Report BRE 211^[4].
- A radon, ground gas and VOC resisting product, when installed in accordance with this Certificate will also act as a damp proof membrane (DPC) to protect the building against the ingress of moisture from the ground.
- Where large relative movements between construction elements are possible, such as in timber-frame construction, the advice of the Certificate holder should be sought.
- It is essential that adequate room ventilation is provided in accordance with TGD Part F of the Building Regulations 1997 and subsequent amendments to limit the moisture content of air.

- BLOWERPROOF®, when fully cured, can accommodate the loads associated with installation. limited foot traffic and building movement likely to occur in service. However, it can be punctured by sharp objects, and it must be protected where there is risk of damage.
- Where the product is applied to the face of a cavity, Consideration shall be given to the installation of Cavity Barrier to meet the requirements of Part B of the building regulations.
- Installation of the product must meet the requirements of TGD part J Cl 2.5.6 regarding to proximity of combustible material to flues. The certificate holder can be contacted for solutions where required.
- The above criteria are part of the installation survey performed prior to the application of the Blowerproof® system.
- Airtightness testing is a mandatory requirement of TGD to Part L of the Building Regulations 1997 and subsequent amendments . Testing must be carried out as specified in IS EN ISO 9972^[5] with additional guidance given in the NSAI's "Certified Air Tightness Tester Scheme Master Document" and clause 1.5.4 of TGD's to Part L of the Building Regulations 1997 and subsequent amendments.
- BLOWERPROOF® products have been shown to resist limited exposure to UV light, but long term exposure of the applied products shall be avoided.
- Use of the BLOWERPROOF® products to improve the airtightness of the building and consequent lowering of associated heat losses, resulting in energy savings.
- System design should also consider such issues as
 - Underfloor heating
 - Construction detailing
 - Construction settlement
- Ventilation systems for sites with perceived risk of VOC vapours and/or Methane and Carbon Dioxide, should have an appropriate ventilation design to ensure adequate ventilation of hazardous gases/VOCs.
- The potential risk to an end user from a source of ground gas or vapour contamination is determined through the conceptual site model and normally involves a protection system made up of a number of different levels. The designer should look to incorporate different levels of protection including passive ventilation, slab construction and radon barrier installation.
- The Blowerproof radon resisting membrane system can incorporate an underfloor sump, or sumps, which can be subsequently converted into an active control system by the use of suitable ventilation fans.

4.1 BEHAVIOUR IN FIRE

BLOWERPROOF® LIQUID BRUSH applied to a 12mm thick Calcium silicate panel of density 870kg/m³, when tested in accordance with EN ISO 11925-2^[6] achieved a reaction to fire classification E in accordance with I.S EN 13501-1^[7].

When tested in accordance with EN ISO 11925-2^[6], EN13823^[8] and classified per EN 13501-1^[7], a test specimen comprising one coat of BLOWERPROOF® LIQUID, at an application rate of 743g/m² onto a 12mm thick calcium silicate panel, achieved a Class C-s1-Do.

Both BLOWERPROOF® LIQUID and BLOWERPROOF® LIQUID BRUSH met the requirements for no flame propagation when tested in accordance with I.S. EN ISO 11925-2^[6].

4.2 AIRTIGHTNESS

The airtightness of connections between the BLOWERPROOF® LIQUID applied membrane and typical adjacent materials were tested in accordance with I.S EN 12114^[9]. These included the connection with EPDM membranes, concrete and hard engineered wood panels (OSB), achieving an Airtightness of Building Connections Class A per I.S. EN 12114^[8] ($< 0,1 \text{ [m}^3/(\text{hm}^2) \text{]}$) as defined by Passive House Institute specifications. See Table 2 for details.

The capability of both BLOWERPROOF® Liquid and BLOWERPROOF® Liquid was also assessed for durability and continued product performance. The airtightness of the building envelope assessed showed no sign of ageing.

4.3 DAMP DIFFUSION RESISTANCE

Both BLOWERPROOF® LIQUID and BLOWERPROOF® LIQUID BRUSH were tested for Damp diffusion resistance in accordance with I.S. EN ISO 12572^[10].

This resulted in an μ value (damp diffusion resistance factor) of BLOWERPROOF® Liquid of 76584 and 35967 for BLOWERPROOF® Liquid Brush. See table 3.

4.4 RADON RESISTANCE

BLOWERPROOF® LIQUID, when tested in accordance with accredited test method K124/02/95^[11], achieved a Radon diffusion coefficient D of $(3,3 \pm 0,3) \cdot 10^{-12} \text{ m}^2/\text{s}$ (when tested with a radon source - steady state concentration of $45,8 \pm 1,1 \text{ MBq/m}^3$), see table 3.

BLOWERPROOF® LIQUID was also tested for methane permeability in accordance with ISO 15105-1^[12] (Differential Pressure Method). See table 3.

Table 2		
Overview of airtightness measurement results.		
Connection/Interface	Value (M ³ /(hm ²)@ 50Pa)	
	Liquid	Liquid Brush
Membrane to Membrane	0.02	0.04
Membrane to OSB	0.03	0.02
Membrane to Concrete	0.01	0.06
Airtightness of the system: insulation panels anchored on and through Blowerproof® applied on concrete block wall.		
Substrate	Concrete blocks	
Applied membrane	Blowerproof® Liquid	
Insulation panels installed on membrane	80mm Rockwool® panels Rocksate Duo Plus	
REDart™ Capa Casa Mortar between concrete blocks and Blowerproof® membrane	Yes	No
Value (M ³ /(hm ²)@ 50Pa)		
Without anchors	0,019	0,013
Air leakage results (per anchor)		
Ejot DH Anchors	+0,001	-
Rawlplug® R-TFIX-8S anchors	+0,001	+0,000
Ejot H2 anchors	-	+0,003
Ejothrm STR U 2G	-	+0,001

4.5 STRENGTH RESISTANCE

Fatigue movement

Both BLOWERPROOF® Liquid and BLOWERPROOF® Liquid Brush were tested for resistance to fatigue movement per EOTA TR008^[13]. See table 3.

Tensile strength

Both BLOWERPROOF® Liquid and BLOWERPROOF® LIQUID BRUSH were tested for tensile strength and elongation after heat and UV ageing in accordance with I.S. EN ISO 527-3^[14] and BS 2782-3^[15] Method 326 E. See table 3.

4.6 WATER TIGHTNESS

Both BLOWERPROOF® Liquid and BLOWERPROOF® Liquid Brush were tested for Water impermeability in accordance with EN 14891^[16]. See table 3.

4.7 ADHESION TESTING

Adhesion testing (unaged and aged) was performed on both BLOWERPROOF® Liquid and BLOWERPROOF® Liquid Brush in accordance with I.S. EN ISO 4624^[17].

Adhesion testing was performed on the following substrates:

- clay bricks (Dry and moist condition),
- concrete (Dry and moist condition)
- calcium silicate stone (Dry and moist condition)
- compressed wood
- OSB wood
- steel
- EPDM roofing
- dot & dab plaster
- plaster render

See Table 3

4.8 VOC

Testing was performed on the BLOWERPROOF® products for VOC, TVOC, ammonia, formaldehyde and carcinogenic, resulting in M1 certification. See table 3.

4.9 DURABILITY

BLOWERPROOF® will be unaffected by the normal conditions found in a construction and will have a life comparable with other elements of construction in accordance with BS 7543^[18]. However, the membrane, like most similar materials, must be protected from sunlight, flame and solvents.


See also Cl. 4.2 of this certificate.

4.10 OTHER INVESTIGATIONS

- The manufacturing process was examined including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.
- Site visits were conducted to assess the practicability of installation.
- Blower door site tests were performed on buildings utilising the BLOWERPROOF® LIQUID and BRUSH products acting as part of an Airtightness System.
- Sample condensation risk analysis were performed and reviewed.

TABLE 3 - PRODUCT CHARACTERISTICS

Characteristic	STANDARD	BLOWERPROOF® LIQUID			BLOWERPROOF® LIQUID BRUSH
Consumption		0,5 to 1 kg/m² (depending on substrate) (Min. 1 kg/m² for use as radon resisting membrane)			0,5 to 1 kg/m² (depending on substrate)
Density		1,2 kg/litre			1,15kg/litre
Colour		— Blue, drying to black membrane — White, drying to white membrane			
Drying time		24 to 72 hours depending on substrate temperature, air humidity, applied layer thickness and ventilation.			
System certification: airtightness of building connections.(IS EN 12114)	Passive House	PASS: COMPONENT A AIR PERMEABILITY: 0.02m³/(hm²)			PASS: COMPONENT A AIR PERMEABILITY: 0,04 m³/(hm²)
Damp diffusion resistance factor (Sd)	EN ISO 12572 ^[10]	µ-value: 76584 (BBRI report) - Sd: 22,9 (consumption: 0,5 kg/m²) - Sd: 34,4 (consumption: 0,75kg/m²)			µ-value: 35967 (BBRI report) - Sd: 11,5 (consumption: 0,5 kg/m²) - Sd: 17,3 (consumption: 0,75kg/m²)
Radon resistance	K124/02/95 ^[11]	3,3 x 10-12 (m²·s ⁻¹)			N/A
		D* (mm) (*)Dry thickness	R _{RN} (s/m)	T _{Rn} (m/s)	
		0,5	156.10 ⁶	6,4.10 ⁻⁹	
		0,6	189.10 ⁶	5,3.10 ⁻⁹	
		0,7	223.10 ⁶	4,5.10 ⁻⁹	
		0,8	259.10 ⁶	3,9.10 ⁻⁹	
		0,9	297.10 ⁶	3,4.10 ⁻⁹	
		1	336.10 ⁶	3,0.10 ⁻⁹	
Resistance to fatigue movement	EOTA TR008 ^[13]	PASS			
Elongation after ageing	I.S. EN ISO 527-3 ^[14]	350,5%			262,7%
Tensile strength (after ageing)	EN 12311 ⁰	20 N/50MM			27 N/50MM
Adhesion of universal bonding compound on BLOWERPROOF® Liquid (Siniat)	I.S. EN 14496 ^[20]	PASS			
Watertightness	EN 14891[16]	PASS			PASS
Adhesion on red brick (dry - moist)	ISO4624 ^[17] Values after artificial ageing of sample membrane Testing realised by BBRI and verified by BBA.	> 1 N/mm²			
Adhesion on concrete brick (dry - moist)		> 1 N/mm²			
Adhesion on calcium silicate stone (dry - moist)		Adhesion value exceeding substrate strength			
Adhesion on Rockwool®, PUR, PIR, Polystyrene.		Adhesion value exceeding substrate strength			
Adhesion on OSB wood		Adhesion value exceeding substrate strength			
Adhesion on multiplex wood		Adhesion value exceeding substrate strength			
Adhesion on steel		> 1 N /mm²			
Adhesion on EPDM (Tridex)		> 1 N /mm²			
Adhesion on roofing		Adhesion value exceeding substrate strength			
Adhesion of plaster (knauf MP75) on BLOWERPROOF® Liquid		Adhesion value exceeding substrate strength			

TABLE 2.. Continued PRODUCT CHARACTERISTICS			
Euroclass – reaction to fire	EN13501-1 ^[7]	C-S1,D0	N/A
Flame propagation	EN ISO 11925 ^[6]	PASS	
Free from VOC, TVOC, carcinogenic, ammonia, formaldehyde	EN ISO 16000-9 ^[21] EN 717-1 ^[22] EN ISO 16000-28 ^[23]		
Methane permeability	ISO 15105 ^[12]	62 – 75 cm ³ (STP)·mm·m-2·day-1·atm-1	N/A

5.0 CONDITIONS OF CERTIFICATION

5.1 National Standards Authority of Ireland ("NSAI") following consultation with NSAI Agrément has assessed the performance and method of installation of the product/process and the quality of the materials used in its manufacture and certifies the product/process to be fit for the use for which it is certified provided that it is manufactured, installed, used and maintained in accordance with the descriptions and specifications set out in this Certificate and in accordance with the manufacturer's instructions and usual trade practice. This Certificate shall remain valid for five years from date of last revision date so long as:

- (a) the specification of the product is unchanged.
- (b) the Building Regulations 1997 and subsequent amendments and any other regulation or standard applicable to the product/process, its use or installation remains unchanged.
- (c) the product continues to be assessed for the quality of its manufacture and marking by NSAI.
- (d) no new information becomes available which in the opinion of the NSAI, would preclude the granting of the Certificate.
- (e) the product or process continues to be manufactured, installed, used and maintained in accordance with the description, specifications and safety recommendations set out in this certificate.
- (f) the registration and/or surveillance fees due to NSAI Agrément are paid.

5.2 The NSAI Agrément mark and certification number may only be used on or in relation to product/processes in respect of which a valid Certificate exists. If the Certificate becomes invalid the Certificate holder must not use the NSAI Agrément mark and certification number and must remove them from the products already marked.

5.3 In granting Certification, the NSAI makes no representation as to;

- (a) the absence or presence of patent rights subsisting in the product/process; or
- (b) the legal right of the Certificate holder to market, install or maintain the product/process; or
- (c) whether individual products have been manufactured or installed by the Certificate holder specifications set out in this Certificate.

5.4 This Certificate does not comprise installation instructions and does not replace the manufacturer's directions or any professional or trade advice relating to use and installation which may be appropriate.

5.5 Any recommendations contained in this Certificate relating to the safe use of the certified product/process are preconditions to the validity of the Certificate. However, the NSAI does not certify that the manufacture or installation of the certified product or process in accordance with the descriptions and specifications set out in this Certificate will satisfy the requirements of the Safety, Health and Welfare at Work Act 2005, or of any other current or future common law duty of care owed by the manufacturer or by the Certificate holder.

5.6 The NSAI is not responsible to any person or body for loss or damage including personal injury arising as a direct or indirect result of the use of this product or process.

5.7 Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certification.

NSAI Agrément

This Certificate No. **23/0437** is accordingly granted by the NSAI to **Hevadex bvba** on behalf of NSAI Agrément.

Date of Issue: **22nd February 2023**
Signed


Seán Balfé
Director of NSAI Agrément

Readers may check that the status of this Certificate has not changed by contacting NSAI Agrément, NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807 3842. www.nsa.ie

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