



NSAI
Agrément

**IRISH AGRÉMENT BOARD
CERTIFICATE No. 03/0177**

Principal Building Products Ltd.,
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Rhinoplast Super Gas Barrier & Rhinoplast Ultra Radon Barrier

Système de barrière Sperrsystem

NSAI Agrément (Irish Agrément Board) is designated by Government to issue European Technical Approvals.

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 to 2008**.



PRODUCT DESCRIPTION:

This Certificate relates to Rhinoplast Super Gas Barrier & Rhinoplast Ultra Radon Barrier. Rhinoplast Super is a co-polymer virgin grade LDPE/MDPE blown film membrane with a unit mass weight of 356g/m². The product is used as part of radon/CO₂/methane gas protection systems in buildings. Rhinoplast Ultra is an LDPE blown film membrane with a unit mass weight of 276g/m². This product is used as part of a radon gas protection system.

This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2008.

USE:

Radon (incl. Rn-222, Rn-220, RnD) is a naturally occurring radioactive gas which enters buildings from the underlying soil. The gas can accumulate within a building to such a concentration as to constitute a health hazard.

Radon is excluded from buildings using passive and active systems. The provision of a suitable protection system, designed and installed by competent personnel will substantially reduce the risk of a building having radon activity above a recommended target health level of 10-40 Bq/m³ (USA).

Passive control systems consist of a radon resisting membrane extending across the whole of the building, including the floor and walls. These systems should also incorporate an underfloor ventilated sump or sumps (see Fig 5), which can be subsequently converted into an active control system by the use of suitable ventilation fans.

A radon resisting membrane when installed in accordance with this Certificate will also act as a damp proof membrane to protect the building against the ingress of moisture from the ground.

MANUFACTURE AND MARKETING:

The products are marketed by:

Tradecraft Building Products Ltd.,
Unit 22,
Cookstown Industrial Estate,
Tallaght,
Dublin 24.
T: 01 4518001
F: 01 4518055
E: sales@tradecraft.ie
W: www.tradecraft.ie

The products are manufactured on behalf of:

Principal Building Products Ltd.,
Railmill Way,
Parkgate,
Rotherham S62 6JQ,
UK.
T: 0044 1709 780680
F: 0044 1709 781420
W: www.pbpltd.co.uk

1.1 ASSESSMENT

In the opinion of NSAI Agrément, Rhinoplast Super & Rhinoplast Ultra, if used in accordance with this Certificate can meet the requirements of the Building Regulations 1997 - 2008 as indicated in Section 1.2 of this Certificate.

1.2 BUILDING REGULATIONS 1997 to 2008

REQUIREMENT:

Part D – Materials and Workmanship

D3 – Rhinoplast Super & Rhinoplast Ultra, as certified in this NSAI Agrément Certificate, are comprised of proper materials fit for their intended use (see Part 4 of this Certificate).

D1 – Rhinoplast Super & Rhinoplast Ultra, as certified in this Certificate, meet the requirements for workmanship.

Part A – Structure

A1 – Loading

Rhinoplast Super & Rhinoplast Ultra, installed in accordance with this Certificate, will not adversely affect the designed safety and deflection characteristics of a building.

Part B – Fire Safety

B3 – Internal Fire Spread (Structure)

Rhinoplast Super & Rhinoplast Ultra will not adversely affect the control of fire and smoke within concealed spaces in the structure or fabric of a properly designed building.

Part C – Site Preparation and Resistance to Moisture

C3 – Dangerous Substances

Rhinoplast Super & Rhinoplast Ultra, when used as an integral part of a radon protection system, will meet this requirement with respect to radon gas.

C4 – Resistance to Weather and Ground Moisture

Rhinoplast Super & Rhinoplast Ultra, when used in accordance with Part 3 of this Certificate, will meet this requirement.

2.1 PRODUCT DESCRIPTION

This Certificate relates to Rhinoplast Super Gas Barrier & Rhinoplast Ultra Radon Barrier. Rhinoplast Super is a co-polymer virgin grade LDPE/MDPE blown film membrane with a unit mass weight of 356g/m². The product is used as part of radon/CO₂/methane gas protection systems in buildings. Rhinoplast Ultra is an LDPE blown film membrane with a unit mass weight of 276g/m². This product is used as part of a radon gas protection system. Product specifications are shown in Table 1.

It is essential that these products are laid in accordance with the recommendations of IS 325-2:1995 *Code of practice for use of masonry* and BS 8102:1990 *Code of practice for protection of buildings against water from the ground*, and with this Certificate.

2.1.1 Ancillary Products:

- Rhinoplast Joint Strip
- Girth Tape
- Top Hats
- Radon Sumps
- Gastite Self-Adhesive Membrane

2.2 MANUFACTURE

Rhinoplast Super & Rhinoplast Ultra are manufactured by an extrusion and blowing process.

2.2.1 Product Quality Control

Quality control checks are carried out on the raw material, during production and on the final product. Quality control checks include:

- Dimensions
- Density
- Tensile strength
- Tear strength
- Vapour permeability
- Weight of rolls

2.3 DELIVERY, STORAGE AND MARKING

Rolls are supplied individually or on pallets, in wrappers bearing the manufacturer's name and product description, NSAI Agrément identification mark, NSAI Agrément Certificate number and essential instructions for storage and installation.

2.4 INSTALLATION

2.4.1 General

Guidance on the design of radon protection systems for new and existing buildings is given in the DoEHLG document *Radon in Buildings*, 1995.

Physical Properties		Result
Rhinoplast Super		
Weight		356g/m ²
Thickness		375µm
Tensile Strength	MD	21.5MPa
	CD	29.4MPa
Elongation	MD & CD	>800%
Dart Impact Strength		1.012kg
Tear Resistance	MD	248N/mm
	CD	303N/mm
Low Temperature Flexibility		-25°C
Radon Permeability		4x10 ⁻¹² m ² /s
CO ₂ Transmittance		26.53cc/m ² hr
Methane Transmittance		6.43cc/m ² hr
MVTR		0.16g/m ² /day
Standard Roll Width		4m
Standard Roll Length		20, 25m
Standard Roll Weight		28.48, 35.60kg
Colour		Yellow
Rhinoplast Ultra		
Weight		276g/m ²
Thickness		300µm
Tensile Strength	MD	17.7MPa
	CD	17.3MPa
Elongation	MD	>860%
	CD	>910%
Dart Impact Strength		0.710kg
Tear Resistance	MD	100N/mm
	CD	94.5N/mm
Low Temperature Flexibility		-40°C
Radon Permeability		4.7x10 ⁻¹² m ² /s
MVTR		0.12g/m ² /day
Standard Roll Width		4m
Standard Roll Length		20, 25m
Standard Roll Weight		28.48, 35.60kg
Colour		Red or Anthracite

Table 1: Product Specification

2.4.2 New Work

Rhinoplast Super & Rhinoplast Ultra can be used in most common ground floor constructions. They are installed in a similar way to damp proof membranes but with much greater attention to detailing and workmanship. The radon membranes will also perform the same function as DPCs and membranes (Figures 2, 3, 4, 5 and 6 show details of the use of the radon barriers in different floor constructions).

To be fully effective, radon resisting membranes must bridge cavities in walls and in doing so should form a cavity tray. Where necessary narrow strips of membrane can be used to seal walls and cavities. All designed cavities must be properly closed.

To avoid creating slip planes in masonry walls a dpc should not be laid on the same course of blockwork as the radon barrier (see the recommendations in IS 325-2:1995).

Consideration must be given to the positioning of a radon resisting membrane in relation to thermal insulation. The recommendations contained in IS 325-2:1995 should be followed.

The integrity of radon resisting membranes must be maintained during installation. Rhinoplast Super & Rhinoplast Ultra are resistant to puncturing and tearing, but where damage occurs this must be repaired by covering with a second layer of membrane sealed to the original using radon sealant tape.

Installation of Rhinoplast Super & Rhinoplast Ultra must be in accordance with the recommendations of IS 325-2:1995, BS 8102:1990, and the requirements of this Certificate. Additional guidance on the use of damp proof membrane materials is given in BS 8000:Part 4:1989 *Workmanship on building sites – Code of practice for waterproofing*.

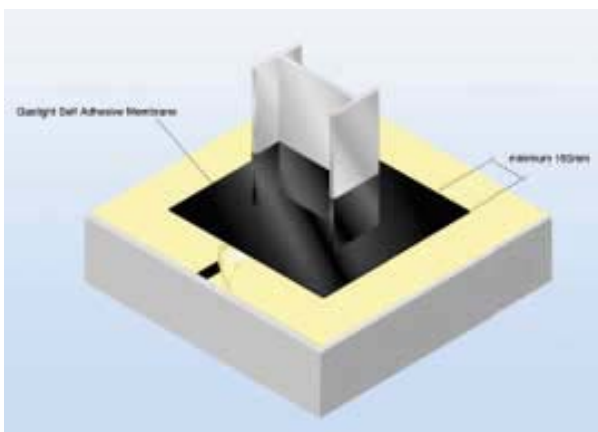


Figure 1: Sealing around a steel stanchion

A surface blinding of soft sand (50mm min. thickness) or geo-textile should be used to prevent puncture of the membrane during installation. A further protection over the membrane is afforded by using high density insulation (25 kg/m³).

Sheets must be clean and free from dirt and grease before application, and in view of the difficulty of achieving gas tight seals under wet or dirty site conditions it is recommended that special care is taken with this aspect of the installation.

Where service ducts or pipes penetrate the membrane, gas tight joints are effected using sealant tape and top hat units with retention clips.

Pipes, steel stanchions and concrete columns can be sealed using the approved adhesive bituminous gas resisting membrane with an overlap of 150mm on each surface and rolled firmly. Steel, concrete and masonry surfaces should be primed, in accordance with the primer manufacturer's instructions, prior to the adhesive membrane being laid. This method can also be adopted to seal pipe collars (Figure 1 shows a detail of sealing around a steel stanchion).

The membrane must be covered by a screed, high density insulation or other protective layer as soon as possible after installation. Care should be taken to ensure that the membrane is not stretched or displaced when placing concrete or other protective layer over it. Great care should be taken to avoid bridging (i.e. creating areas of unsupported membrane) during screeding operations, for example at internal angles.

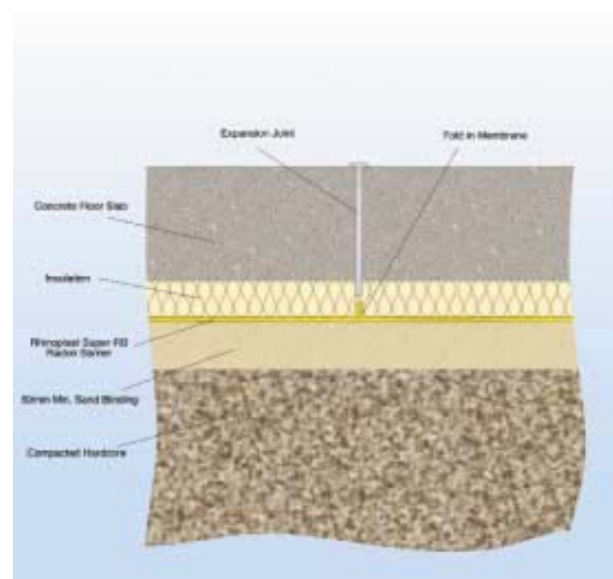


Figure 2: Detail showing typical movement control joint

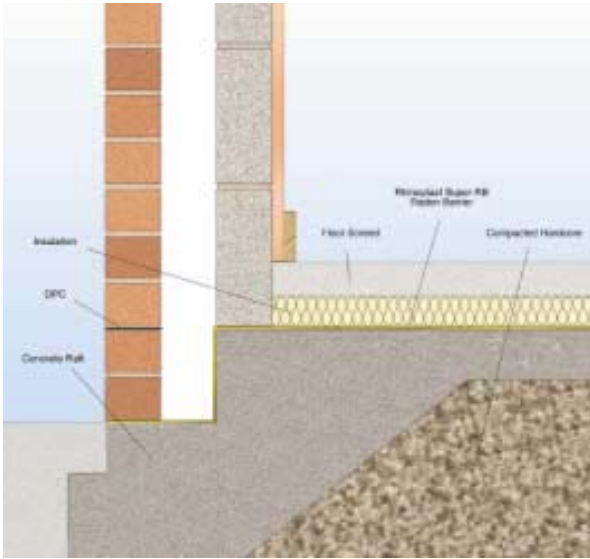


Figure 3: Raft foundation detail

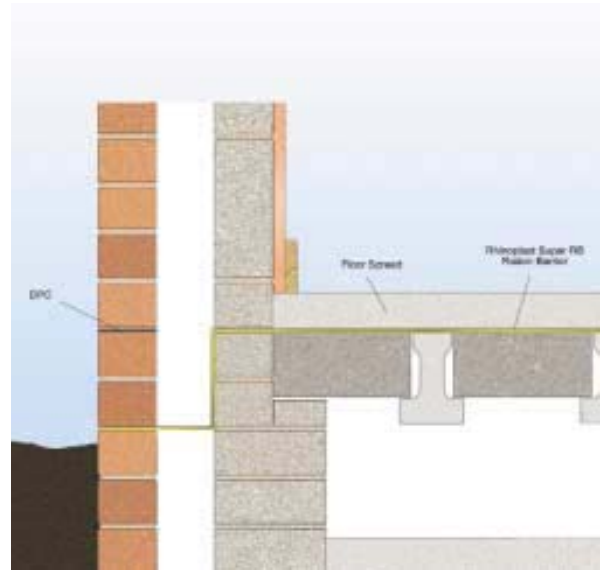


Figure 4: Detail for suspended concrete floor

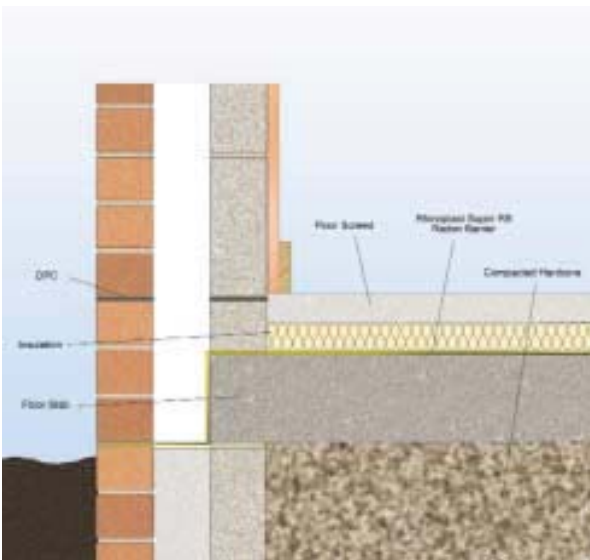


Figure 5: Detail of radon barrier over the floor slab and under insulation and screed

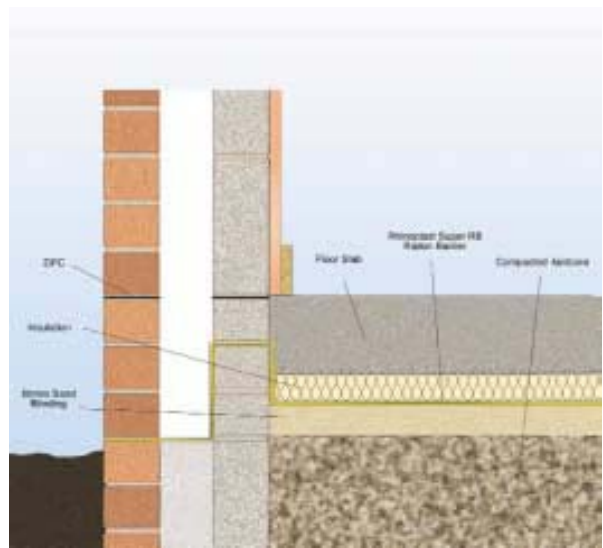


Figure 6: Detail showing radon barrier placed on soft sand blinding under insulation and floor slab

3.1 GENERAL

Rhinoplast Super & Rhinoplast Ultra are suitable for use in concrete floors not subject to hydrostatic pressure, in accordance with the relevant clauses of IS 325-2:1995 and BS 8102:1990.

The membranes can be installed as over-site membranes, either between a sand blinded hardcore (50mm of sand minimum) bed and the base concrete, or laid on top of high density insulation (25kg/m^3) with a concrete screed laid over it.

Resistance to water and water vapour

The membranes and the methods of jointing provide an effective barrier to the passage of radon gas, liquid water and water vapour from the ground.

Resistance to tear

The products have a high resistance to tear (see Table 1). Care should be taken during installation, particularly when handling building materials and equipment over the surface and when placing concrete or screeds, since the membranes can be punctured by sharp objects. High density insulation (25kg/m^3) is an effective protection after laying.

Site conditions

The system may be installed in all conditions normal to ground floor slab construction. Where there is a risk of ground becoming waterlogged, sub-soil drainage must be provided in accordance with IS 325-2:1995 and BS 8102:1990.

Underfloor heating

When used in accordance with the conditions set out in this Certificate, there will be no adverse effect on the membranes from underfloor heating under normal conditions. The manufacturer's advice should also be sought for project specific details.

3.2 CONSTRUCTION DETAILING

To reduce radon gas migration into buildings the following guidelines should be followed:

- Design for controlled movement of construction (see IS 325-2:1995);
- Ensure that all designed cavities are effectively closed to interior spaces;
- Design for grouping of services with effective gas seal of ground slab openings and penetrations.

3.3 CONSTRUCTION SETTLEMENT

Consideration should be given to differential and/or relative settlement of ground floor construction during the full life cycle of the building.

Where special installation detailing is introduced, i.e. folding of a radon resisting membrane at critical construction points, an elongation capability for the membrane itself may not be required. Where high concentrations of radon are likely and where a building is properly designed, detailed and constructed to take account of settlement, the installation of Rhinoplast Super & Rhinoplast Ultra represents an effective measure against radon health hazards.

4.1 TESTS / ASSESSMENTS

Various technical investigations were carried out on Rhinoplast Super & Rhinoplast Ultra. Typical results are shown in Table 1.

4.2 DURABILITY

When installed in accordance with this Certificate and subject to normal conditions of use, the membranes will provide an effective barrier which will be substantially impervious to the transmission of radon gas, liquid water and water vapour for the life of the building. Long periods of exposure to UV light can reduce the effectiveness of a membrane. However, during storage, and when installed in accordance with this Certificate, the membranes will be protected from such exposure.

It is important to note that alterations to the building structure subsequent to the installation of a radon protection system must take into account the integrity of the radon resisting membranes.

4.3 OTHER INVESTIGATIONS

(i) Existing data on product properties in relation to fire, toxicity and environmental impact were assessed. When stored with normal care on site prior to installation these membranes do not present a significant fire or health hazard.

(ii) 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.

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 issue so long as:

- (a) the specification of the product is unchanged.
- (b) the Building Regulations 1997 to 2008 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 in accordance with the descriptions and 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.

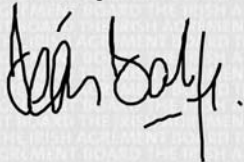
5.7 Where reference is made in this Certificate to any Act of the Oireachtas, Regulation made thereunder, Statutory Instrument, Code of Practice, National Standards, manufacturer's instructions, or similar publication, it shall be construed as reference to such publication in the form in which it is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

NSAI Agrément

This Certificate No. **03/0177** is accordingly granted by the NSAI to **Principal Building Products Ltd.** on behalf of NSAI Agrément.

Date of Issue: **July 2003**

Signed



Seán Balfe
Director of NSAI Agrément

Revisions: December 2009

- Addition of Rhinoplast Ultra Radon Barrier.
- Update to 2008 Building Regulations.
- Update marketing details.

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.nsai.ie