



NSAI
Agrément

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CI/SfB

**IRISH AGRÉMENT BOARD
CERTIFICATE No. 16/0386**

Laydex Ltd,
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Laydex Polysump Radon Sump

Puisard au Radon Radon Ölwanne

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 2019**.



PRODUCT DESCRIPTION:

This Certificate relates to the Laydex Polysump Radon Sump, which is used as part of a radon protection measure in buildings and enables sub-floor depressurisation or pressurisation to be introduced if required at a later date.

This Certificate certifies compliance with the requirements of the Building Regulations 1997 to 2019.

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).

All new buildings should be designed and constructed with features which facilitate post-construction radon removal from interior spaces and superstructure construction cavities. Should radon levels increase, because of time-dependant or other factors during the lifecycle of a building, the Laydex Polysump Radon Sump is specifically designed to be converted with ease into an active protection measure.

The most important passive radon protection measure consists of a properly installed radon resisting membrane extending across the whole of a building, including the ground floor and all walls. This measure also ensures a necessary degree of separation in a floor construction, so that:

a) Prior to activation of the sub-floor radon soil gas control system, the likelihood of radon

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entry into the building is decreased due to the presence of a gas permeable layer at foundation level;

- b) In the event that the control system is activated, there will be no effects on heat producing appliances or the patterns of natural ventilation in interior spaces, and heat losses will not be increased.

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Part F – Ventilation

1.1 ASSESSMENT

In the opinion of NSAI Agrément, the Laydex Polysump Radon Sump, if used in accordance with this Certificate, can meet the requirements of the Building Regulations 1997 - 2014 as indicated in Section 1.2 of this Certificate.

1.2 BUILDING REGULATIONS 1997 to 2019

REQUIREMENT:

Part D – Materials and Workmanship

D3 – The Laydex Polysump Radon Sump, as certified in this Certificate is comprised of proper materials fit for their intended use (see Part 4 of this Detail Sheet).

D1 – The Laydex Polysump Radon Sump, as certified in this Certificate, meets the requirements for workmanship.

Part A – Structure

A1 – Loading

The Laydex Polysump Radon Sump, when installed in accordance with this Certificate, has adequate strength and stiffness to accept floor loads (see Part 3 of this Detail Sheet).

A2 – Ground Movement

The Laydex Polysump Radon Sump, when installed in accordance with this Certificate, will accommodate a limited degree of the normal ground movement to be expected over the lifecycle of a building.

Part C – Site Preparation and Resistance to Moisture

C3 – Dangerous Substances

The Laydex Polysump Radon Sump, when installed in accordance with this Certificate, will provide a potential means of extracting radon from a building.

MANUFACTURE AND MARKETING:

The products are manufactured on behalf of and marketed by:

F1 – Means of Ventilation

The Laydex Polysump Radon Sump, when installed in accordance with this Certificate, is completely separated from interior spaces; it will therefore not affect the patterns of natural ventilation in a building.

Part J – Heat Producing Appliances

J3 – Protection of Building

The Laydex Polysump Radon Sump, when installed in accordance with this Certificate, is completely separated from the internal spaces of a building and will therefore not affect the operation of heat producing appliances. It will also not prejudice the fire protection of buildings local to fireplaces or flues.

2.1 PRODUCT DESCRIPTION

This Certificate relates to the Laydex Polysump Radon Sump, manufactured from medium density polyethylene plastic. The sump is octagonal in shape, and has 4 spigots intended for the insertion of 110mm diameter drainage pipe. It is constructed with a solid roof, base and walls, and is provided with 32 circular ventilation openings.

Drainage Pipes and Fittings

Underground, the drainage pipes and fittings used must be manufactured in accordance with IS EN 1401-1^[1].

Above ground, pipes and fittings used for the system activation must be manufactured in accordance with IS EN 1329-1^[2].

2.2 MANUFACTURE

The Laydex Polysump Radon Sump is manufactured by a rotational moulding process from medium density polyethylene.

2.2.1 Product Quality Control

Quality control checks are carried out during production and on the final product where appearance, colour, dimensions, weight and freedom from defects are checked.

2.2 DELIVERY, STORAGE AND MARKING

The Laydex Polysump Radon Sump is supplied secured on pallets. The product name, supplier's name, address and contact information, together with the NSAI Agrément certificate number are clearly labelled on the packaging, along with essential instructions for storage and installation.

2.3 INSTALLATION PROCEDURE

2.3.1 General

Installation of the Laydex Polysump Radon Sump must be in accordance with the manufacturer's instructions and this Certificate.

2.3.2 Procedure

The Laydex Polysump Radon Sump must be placed in an area of maximum percolation, that is, in the upper levels of hardcore. It should be placed as close as possible to the centre of the floor plan of the building and placed tight up against the radon barrier or concrete slab. One sump is sufficient for approximately each 250m².

The sump should be connected to the sealed pipework routed to the outside of the building. This should discharge to fresh air at high level.

The Laydex Polysump Radon Sump must be surrounded by selected hardcore Type B material (gas permeable unbound granular fill) as defined in SR 21^[3] (4/40 G_c80/20 G_{TNR} as per Table 3 of SR 21^[3]). It should be made firm immediately after placing and be protected from site traffic before the floor slab has been laid.

The Laydex Polysump Radon Sump has 4 no. 110mm diameter spigots intended for the insertion of 110mm diameter drainage pipes. Typically, one of these pipes should be laid in accordance with standard pipe laying procedure to connect with a vertical vent pipe on the outside of the building. There should be no openings into the building such as windows or vents within 300mm of the vertical vent pipe.

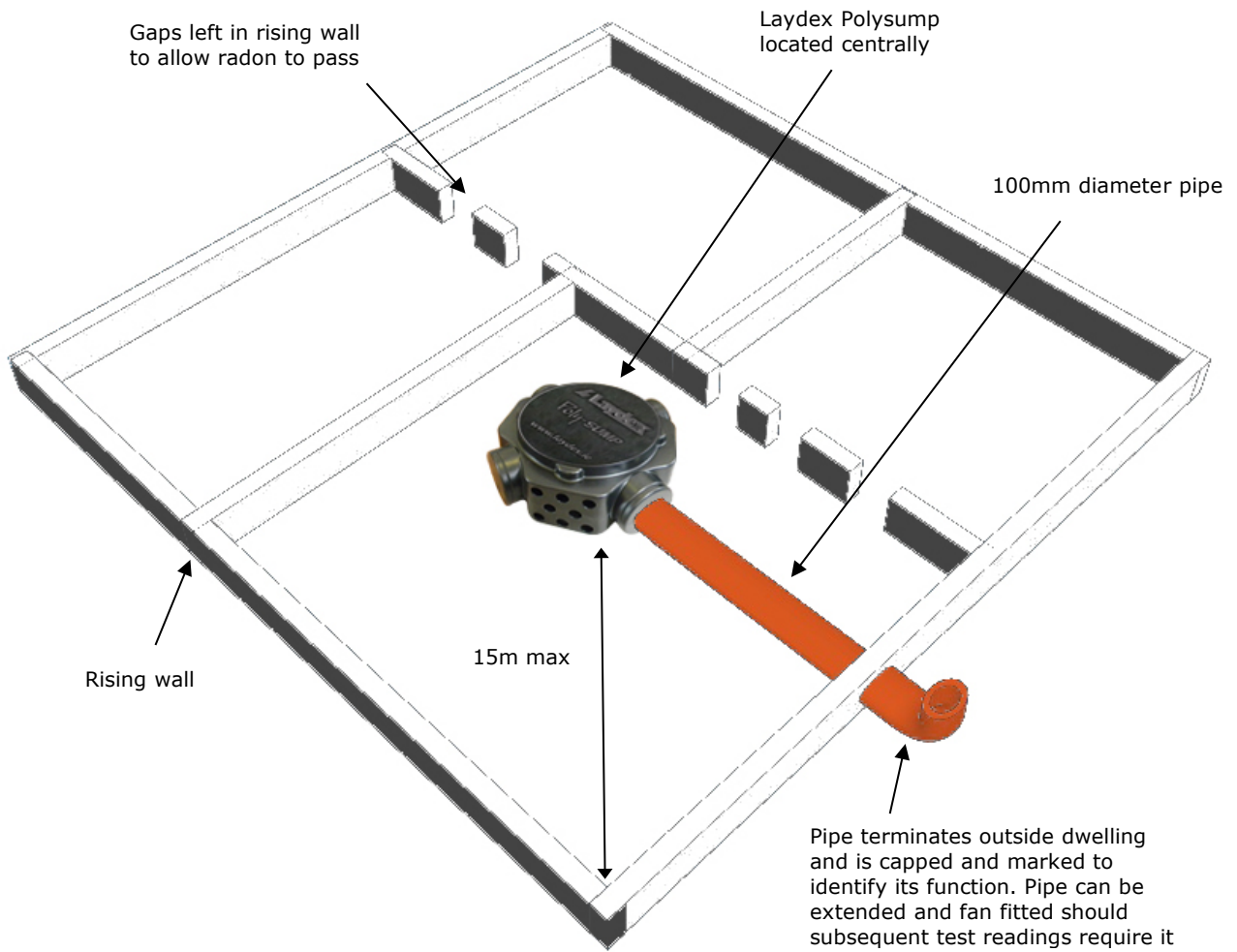


Figure 1: Sump layout

3.1 GENERAL

Radon sumps or sumps with connecting pipework or other appropriate certified systems should be provided in all buildings as a potential means of extracting Radon from the substructure. Advice on the design, location and number of standby Radon sumps along with design of associated pipework is contained in *Radon in Existing Buildings – Corrective Options (2002)*.

The pipework from a standby Laydex Polysump Radon Sump should terminate and be capped either above ground level externally or in the attic space. Externally pipes should be provided with sealed caps to prevent ingress of water or rodents. Pipe terminals should be clearly marked to indicate the function of the pipework system to facilitate later activation.

By extending the pipework and installing and activating a fan, the standby Laydex Polysump Radon Sump becomes a sub floor gas extraction system. The terminal should be located so that the pipework and fan can be practically fitted, without causing unnecessary obstruction.

The Laydex Polysump Radon Sump may be installed in all conditions normal to ground floor slab construction. Where there is a risk of the ground becoming waterlogged, sub-soil drainage must be provided in accordance with BS 8102^[4].

The Laydex Polysump Radon Sump has adequate strength and stiffness to support slabs and screeds as per IS EN 1991-1-1^[5].

3.2 RADON MEMBRANES

In areas identified by the RPII as High Radon Areas, Radon resisting membranes are required to be installed in addition to the installation of a Radon sump. Such membranes must meet the requirements of Part C of the Building Regulations 1997 to 2019. They should have independent certification as a radon membrane, and be installed in the same manner as described in Section 3 of the TGD to Part C.

4.1 TESTS / ASSESSMENTS

Typical results are shown in Table 1 below.

	Value/Units
Weight	1.3kg
Colour	Black 9001
Density	0.938kg/m ³
Compressive strength	29.5mm deflection under 10kN load

Table 1: Product Specification

4.2 MAINTENANCE

No maintenance of the Laydex Polysump Radon Sump is required.

4.3 DURABILITY

When installed in accordance with this Certificate and subject to normal conditions of use, the Laydex Polysump Radon Sump will provide an indefinite effective passive depressurisation effect.

Note: replacement of fans will be required in active systems.

When installed in accordance with this Certificate, the Laydex Polysump Radon Sump will be protected from ultraviolet light exposure during storage and when in use.

4.4 OTHER INVESTIGATIONS

- (i) Existing data on properties in relation to strength and toxicity were assessed.
- (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 2019 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, 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. **16/0386** is accordingly granted by the NSAI to **Laydex Ltd** on behalf of NSAI Agrément.

Date of Issue: **February 2016**

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.n Sai.ie

Revisions:

17 February 2022: References to Building Regulations and standards updated, bibliography added.

Bibliography

- [1] IS EN 1401-1:2019 *Plastics piping systems for non-pressure underground drainage and sewerage – Unplasticized polyvinyl chloride (PVC-U) – Part 1: Specifications for pipes, fittings and the systems.*
- [2] IS EN 1329-1:2020 *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure – Unplasticized polyvinyl chloride (PVC-U) – Part 1: Specifications for pipes, fittings and the system.*
- [3] SR 21:2014 *Guidance on the use of I.S. EN 13242:2007+A1:2007 – Aggregates for unbound and hydraulically bound materials for use in civil engineering work and road construction.*
- [4] BS 8102:2009 *Code of practice for protection of below ground structures against water from the ground.*
- [5] IS EN 1991-1-1:2002 *Eurocode 1 – Actions on structures – General actions: Densities, self-weight, imposed loads for buildings.*