

Type N used with radon/methane (cavity) barriers.

Type N Sitsesealer Membrane

for gas and damp-proofing

in brief...

- Seals against water transmission and gas transmission
- Cross-orientated ply construction
- Self-sealing bonding with lap-link edge
- Accompanying service entry accessories

MEMBRANES

use

Damp-proofing membrane with methane and radon resistant qualities. Suitable for use on oversite to seal against rising gas. Also suitable as a general damp-proof membrane and for specific tanking purposes.

introduction

Solid concrete floors and underground structures require a damp-proof and waterproof membrane to adequately resist the passage of moisture to the inside of the building. In addition, a membrane with gas-resistance is required when construction takes place on a methane emitting site and/or a site subject to radon gas building control measures. Type N sitsesealer membrane is supplied for such purposes.

type n sitsesealer membrane

Type N Sitsesealer gas grade membrane was developed from and is an enhanced version of our original general purpose membrane. It is of multi-ply format, consisting of a cross-orientated top layer or polyethylene, laminated to a bitumen polymer adhesive base layer. A full width aluminium primary integrity barrier is sandwiched between these materials. The result is a gas resistant membrane, offering exceedingly low gas permeability. Type N Sitsesealer gas grade

membrane is supplied on a carrier release paper, in rolls of 30 sq. metres. Each roll incorporates a lap-link edge, to accommodate easy alignment and lapping when rolls are laid side by side.

Type N membrane is flexible and serviceable when subjected to stress movement normally witnessed on site. It will adhere to clean dry surfaces, whilst surfaces that are unsatisfactory because of dust or porosity may be primed using Sitsesealer primer. At all times our explicit instructions regarding storage, handling and application must be observed.

The membrane may be used with our cavity barriers to create a combined DPC and gas integrity shield throughout the walls and oversite of the entire construction.

sizes

Standard roll 28.6 metres x 1.05 metres x 1mm = 30 sq. metres
 Minimum recommended overlaps:
 Side 50mm
 Ends 100mm
 Sitsesealer primer is available in 25 litre cans. 1 litre covers 5 to 8 sq metres, pending porosity of surface.
 Sitsesealer linking/edging strip, for intricate areas, lap and patch purposes, reinforcing, etc., is supplied in rolls 30 metres x 100mm width.
 An optional protection board

to provide temporary cover to laid membrane against site traffic is available.

colour

Bitumen black.

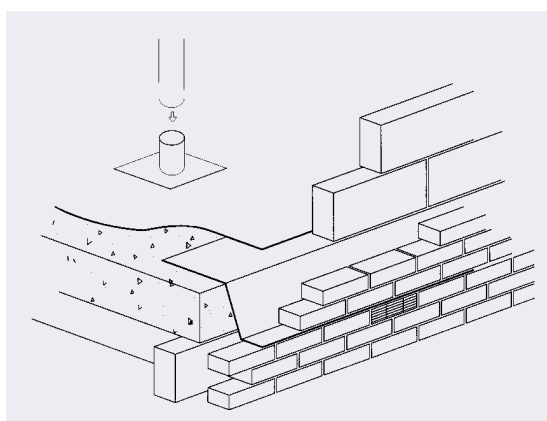
service entry points

A range of preformed components are available for use where services enter through the membrane. Termed Service Entry Points, they provide a standardised method of addressing continuity of protection. A typical example is shown below.

installation/site work

Comprehensive installation details are contained within the original BBA certificate and code of practice 102. Instructions also accompany every consignment and should be studied prior to use of the material.

Generally, surfaces receiving sitsesealer should be smooth and free from projections, deposits, cavities etc. Unsatisfactory or damaged surfaces must be made good prior to the introduction of membrane. Surfaces must be frost-free, clean and dry. On porous surfaces or surfaces which are particularly dusty, sitsesealer primer should be used. (Do not apply at temperatures below 5°C.) All vertical surfaces should be primed when encountered. Ensure sufficient primer is used to create a satisfactory surface to receive membrane. Any vertical or horizontal loading should be applied immediately after installation to protect the membrane. This action also resists water/water vapour pressure. Membranes must always be protected.



Service pipes travelling through the membrane/oversite may be sealed using a preformed Service Pipe Entry Point. (SPEP's) Specify SPEP plus diameter of pipe.

designers' comments

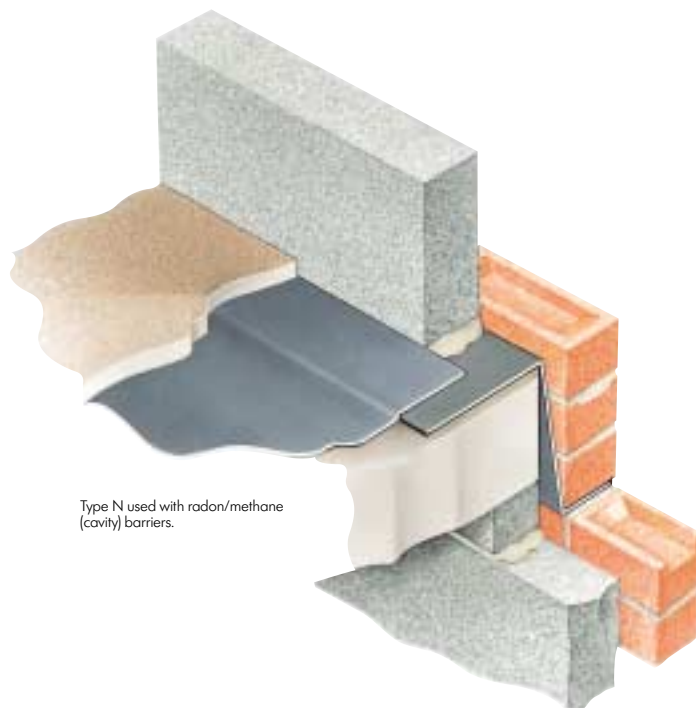
The Type N sitsesealer membrane (gas grade) was subjected to a radon monitoring test. The diffusion co-efficient in sitsesealer was reported as being less than 5 x (10⁻¹⁴m²s⁻¹). The membrane has a very low permeability of methane and radon gas and has been formulated to reduce the passage of such gases on reclaimed or landfill sites and other gas emitting sites. When the British Board of Agreement carried out tests on our Type N waterproofing membrane, they confirmed it satisfies Building Regulations (England & Wales) C4, reg. 7. Building Regulations (Scotland) 10 - B2.1 and 17-G2.6. Building Regulations (Northern Ireland) B2 and C5.

technical observations

High resistance to water pressure, water vapour transmission and gas transmission.
 Cross-orientated ply construction.
 Self-seal bonding, eliminates joint heating and drying.
 Branded with name and logo as proof of type and accompanying warranty.

Type N Site-sealer Membrane

for gas and damp-proofing



in brief...

- Seals against water transmission and gas transmission
- Cross-orientated ply construction
- Self-sealing bonding with lap-link edge
- Accompanying service entry accessories

bill of quantity wording

Type N site-sealer membrane from Cavity Trays of Yeovil, Somerset BA22 8HU (01935 474769). Install membranes at appropriate stage in accordance with accompanying instructions/standards.

ordering

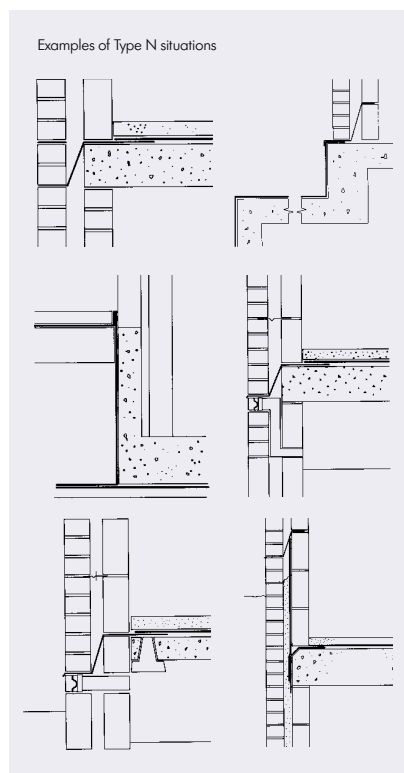
See back pages for immediate service throughout the United Kingdom. Merchant distribution network.

building regulations

Building Regulations, British Standards and NHBC requirements may be satisfied with use of this product. See page listing references.

related products and applications

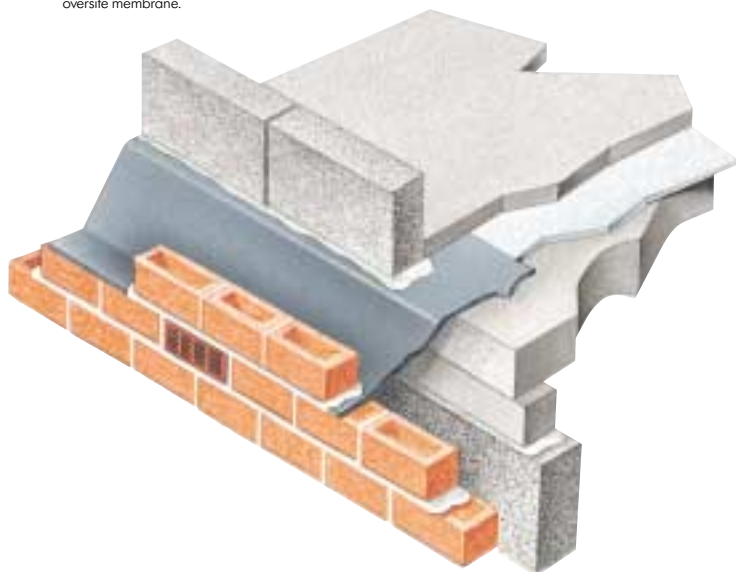
Refer to all products in this section.



TYPE N - GAS GRADE

Property	Test Method	Unit	Data
DIMENSIONS			
Backing Thickness	-	mm	0.10
Backing Type	-	-	HOPE/Aluminium Laminate
Adhesive Thickness	-	mm	1.40
Total Thickness	-	mm	1.50
Width	-	mm	1050
Length	-	m	19.05
Weight	-	kg/m ²	1.7
Carton Size	-	mm	260 x 260 x 1080
Carton Weight	-	kg	35
MECHANICAL PROPERTIES			
Membrane Strength	BS 2782 Method 320	N/cm	45
Elongation	BS 2782 Method	%	300
Puncture Resistance	ASTM E154	N	250
Adhesion (180° Peel)	ASTM D1000	N/cm	36
FUNCTIONAL DATA			
Water Vapour Permeability	BS 3177	g/m ² /24h	<0.01
Methane Gas Permeability	Wimpey Environmental Est. Method	ml/m ² /24h	0.03
Radon Gas Permeability	NRPB	m ² /s	5.10 ⁻¹⁴
Water Penetration Joint	MOAT 5.1.4	%	Nil
Dimension Stability			
Longitudinal	MOAT 5.1.6 (70°C)	%	0.0
Lateral			0.0
Mean atmospheric pressure (mm of HG)		760.0	
Partial pressure difference (methane mm of Hg)		756.2	
Temperature (c)		20	
% Methane on volume V after time T		<0.0001	
Volume V (mls)		1151.9	
Time (day)		5.0	
Cross section area of membrane m ²		7854x10 ⁻²⁴	
% Humidity		100	
Permeance		<0.03ml/m ² day/atmos	

This style of methane barrier shows the barrier rising within the cavity and travelling across the horizontal oversite where it is lapped and sealed with the oversite membrane.



Methane Barriers

for use within cavity walls

in brief...

- Preformed cavity barrier lengths and angles
- Excellent gas resistance
- Compatible with oversite membrane
- Ensures regulation compliance

use

Preformed barriers for installation in new-build properties at ground floor level. Designed to prevent methane gas concentrations accumulating.

introduction

Properties are currently being constructed on soil from which methane gas is emitted. Methane gas can and has resulted in explosion/fire and steps must be taken to construct new properties on methane emitting ground in a manner that controls this hazard and permits safe discharge of the dangerous gas. Methane barriers by Cavity Trays Limited are manufactured for this purpose.

methane barriers

Methane barriers are supplied in long lengths with accompanying corners, angles etc. The barriers are incorporated within the cavity wall at ground level. They rise within the cavity and project through the inside skin and across the oversite. Oversite membranes are also available which seal to the perimeter cavity mouldings. Thus, a methane barrier is created across the property floors and walls, and methane gas is prevented from accumulating within the structure. Any methane gas which rises is forced to discharge via perimeter air bricks which promote emission into the

open air and away from the building. Methane barriers use the same high-void format as radon barriers which cross-ventilate structures on all external boundaries at the highest possible level in relation to the barrier position. Being lighter than air, methane gas will rise to the top of any enclosed space. However, when mixed with other gases the combination can in fact be heavier than air. In selecting the appropriately sized barrier to suit the cavity construction, consideration must also be given to the rainwater which will penetrate the external leaf of the structure and upon saturation produce volumes of water on the inside face of the external skin.

All barriers must arrest this downward flow of moisture, and discharge same through weepvents. Thus, methane prevention barriers undertake the two operations of arresting rising methane gas and arresting downward travelling penetrating rainwater. We always recommend a thorough survey of the site to establish the existing and the potential risk factors. A survey will determine the most appropriate method of barrier format in conjunction with proposed construction methods. Normally slab/ground beam construction is appropriate and permits a naturally

ventilated/void granular fill sandwich construction. Her Majesty's Inspectorate of Pollution offer advice on the matter of good design under such circumstances.

sizes

Methane barriers share the same poplar profiles as radon barriers, see panel opposite. All dimensions can be varied and we suggest we prepare a schedule with our recommendations. There is no charge for this service. Internal and external angles, changes of level and drop-link angles are manufactured to match barrier profiles.

material

Petheleyne.

colour

Black.

installation/site work

Perimeter barriers should be bedded in mortar and masonry bedded onto barriers. Do not dry bed. Ensure all adjoining lengths and mouldings are sealed using accompanying methane sealing tape. Lap 150mm. Ensure ventilation cavibricks are incorporated and positioned in accordance with schedule. Ensure Type W weepvents are installed at the appropriate intervals on the top face of the barrier in the external skin. Oversite membrane should be lapped and sealed to provide airtight junctions throughout.

Make sure all sections and joins are made positively. Create water-checks to top face of barriers, where specified. Read accompanying instructions.

bill of quantity wording

Methane resistant barriers in Petheleyne from Cavity Trays of Yeovil, Somerset BA22 8HU (01935 474769). Install barriers at appropriate stage in accordance with accompanying instructions/standards.

ordering

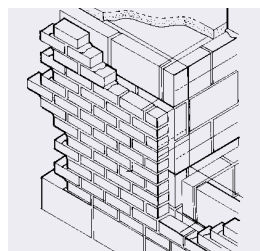
See back pages for immediate service throughout the United Kingdom. Merchant distribution network.

building regulations

Building Regulations, British Standards and NHBC requirements may be satisfied with use of this product. See page listing references.

related products and applications

Refer to all products in this section.



Barrier integrity must be maintained at changes of level and party walls.

designers' comments

"The gases which can affect the occupants of buildings include methane and carbon dioxide. Methane is a flammable gas which forms an explosive mixture with air when the concentration is between 5 and 15% in volume. A 1% concentration suggests that remedial measures are needed. Where carbon dioxide is also present the range is narrowed and when the proportion of carbon dioxide reaches 25%, methane becomes non-flammable. Carbon dioxide has asphyxiating properties. A 5% concentration by volume suggests that remedial measures are needed where people will normally be present."

See radon barriers for Petheleyne specification. See Type N sitesealer for oversite membrane.

technical observations

High void ventilation format.
Gas resistant.
Flexuous composition accommodates minor structural movements.
Provides water barrier/protection.
Preformed to avoid site errors
Branded with name and logo as proof of type and accompanying warranty.

Radon Barriers

for use within cavity walls

in brief...

- Preformed cavity barrier lengths and angles
- High-void gas ventilation
- Ensures regulation compliance in affected areas



Oversite barrier and cavity barrier link to form safety shield.

designers' comments

The radon element applicable (chemical symbol Rn and atomic number 86) is a group O gas. Occurring as three isotopes (219, 220 and 222), it is formed when there is radioactive decay of actinium, thorium and uranium. (Isotopes commonly known as actinon, thoron and radon.) Radon is classified as radon 222 which is recognised as the radiation danger in buildings. Radon 222 decays and produces a series of decay products, often described as radon 'daughters'. Whilst radon 222 is a gas, the decay products are technically solids which attach to particles in the air as they are formed. It is such particles that settle in buildings and can enter the human lungs. Barriers and membranes are intended to reduce the diffusion of radon 222 gas from the ground into the building envelope. Whilst no barrier is completely impermeable, the use of barriers and connecting oversite membranes can reduce the level of radon gas if correctly installed, with careful attention given to all joints, upstands, junctions and links. A sample test analysis of 1.5mm Petheleyne resulted in permeability of less than 1.6 10⁻¹²m²s⁻¹ (results quoted as ratios of track counts).

use

Preformed Petheleyne barriers designed to minimise the entry of radon gas into the building.

introduction

Radon barriers function in the same manner as methane barriers. They are installed in cavity walls around the perimeter of a structure. They are so proportioned and shaped to encourage rising radon gas within the cavities to be arrested and discharged via brick ventilators appropriately positioned. The barriers extend through at floor slab level and link with the radon resistant oversite membrane. The combined use of cavity barriers and oversite barriers minimise radon entry into the building envelope which would otherwise take place. Thus, levels are reduced within the building and at all times radon-laden air is promoted to follow a discharge route out of the structure, rather than within it.

application

If construction is taking place in an area subject to radon emission or in an area in which radon emission is suspected, we recommend barriers are always incorporated. The local authority should be consulted, in the interests of health and safety, and the possible future liability of the designer and contractor.

general

For the successful treatment of radon gas, it is necessary to identify likely radon entry routes and also undertake appropriate work to a good standard. The principle is to prevent the rising gas from entering the house. Petheleyne barriers are installed within all cavity walls at floor slab level and are linked to the oversite membrane in a manner that creates an integrity shield across the entire property. Stepped and staggered properties require careful attention to ensure integrity in the horizontal, vertical and stepped plane. Radon gas is confined below the floor slab level and vent discharged where it quickly dilutes in the outside air. Weepvents are required at specified intervals at barrier level, to facilitate the discharge of rainwater which penetrates the external skin.

sizes

Standard straight lengths 2.4m long.
Standard angles 450mm x 450mm.
Profiles shown are the most commonly used, different profiles are available. Adjoining lengths and angles should overlap by 150mm minimum. Radon sealing strip supplied in 22.5m rolls. Calculation of total barrier requirements should include all angles, changes of level and accompanying overlaps.

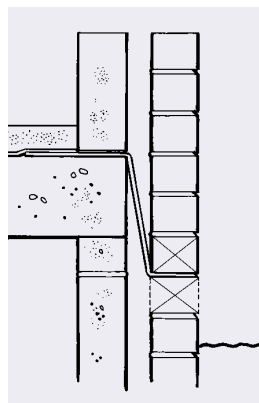
Petheleyne barriers are provided in a variety of sizes to accommodate horizontal runs, corners, steps, vertical links, party wall situations with integral wall channels, etc. We recommend submission of drawings to permit us to calculate/take-off your requirements. A quotation will then be dispatched for your approval. It is quite probable that your requirements may be supplied from some of our stock sizes, and once familiar with this system you may care to calculate your own requirements in the future. However, our quotation/processing service is always available to you.

material

Petheleyne.

colour

Black.



Section shows typical barrier in position. Gas exhausts under the barrier and rainwater above the barrier.

bill of quantity wording

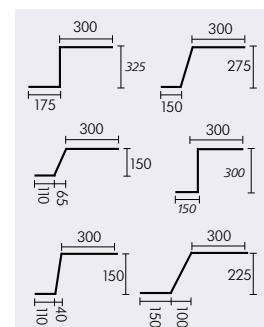
Radonbar the property. Radon prevention barriers in Petheleyne by Cavity Trays of Yeovil, Somerset BA22 8HU (01935 474769). Incorporate Petheleyne radon prevention barriers in accordance with manufacturer's instructions. Observe good building practice and wet bed all barriers in accordance with codes of practice regarding installation of damp-proof courses. Ensure all junctions between barrier lengths and mouldings are well lapped and sealed using radon barrier sealing tape.

building regulations

Building Regulations, British Standards and NHBC requirements may be satisfied with use of this product. See page listing references.

ordering

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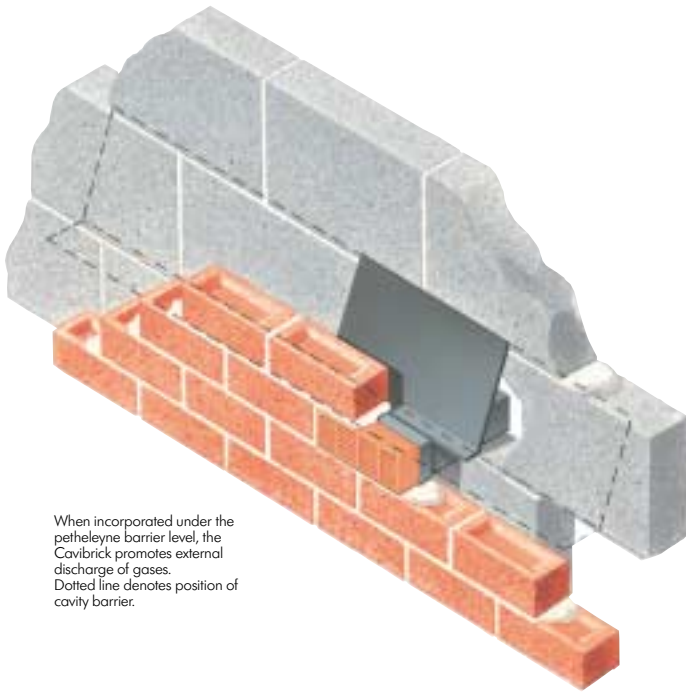
Typical examples of sections available. All dimensions are variable to suit individual requirements.

Discharge Outlets

gas and water discharge outlets

in brief...

- Compatible gas outlets
- Compatible water outlets
- Selection of colours



When incorporated under the pethelene barrier level, the Cavitybrick promotes external discharge of gases. Dotted line denotes position of cavity barrier.

MEMBRANES

use

Discharge routes for trapped gases and trapped rainwater.

introduction

The use of membranes and cavity barriers dictate the installation of accompanying measures to evacuate the arrested gasses and arrested rainwater out of the structure. The examples shown are described in detail on the relevant product pages within section 4. The purpose of these entries is to highlight aspects that must be addressed as part of any contaminated land gas protection system. We will be pleased to take off quantities for any size of project and submit a composite proposal embracing all requirements.

cavitybrick ventilator

Brick-sized ventilator available in many colours. May be used at appropriate centres beneath the radon or methane barrier level to promote discharge of trapped gases. When servicing the cavity, the Cavitybrick ventilator is used without a sleeve. Straight or cranked sleeves are introduced to service specific areas or voids. The adjacent ground level must be considered at all times.

type W weepvent and euroweep-vent

Perp weepvents for use on the upper surface of the barrier level. Both products when used at the appropriate centres promote evacuation of penetrating rainwater arrested

at barrier level, whilst simultaneously allowing the cavity to breathe. Type W weep/vents and Euroweep-vents are dual-purpose and of bi-pressure performance/ function. They should not be confused with products which do not offer this advantage.

related products and applications

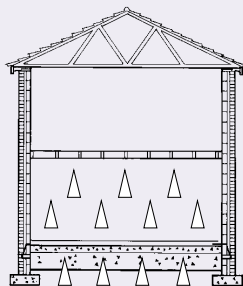
Refer to all products in this section.



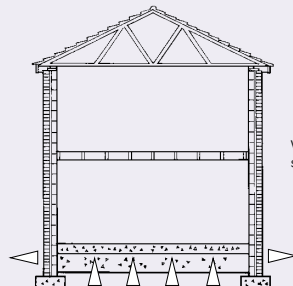
Penetrating rainwater is discharged via Type W weepvents incorporated at 450mm minimum centres around the building perimeter. Type W are dual function and also permit the cavity above the barrier level to breathe (specify Type W in selected colour).



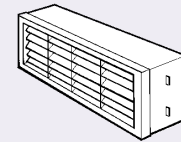
Without integrity shield and ventilators



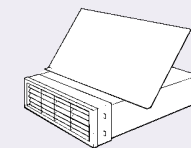
With integrity shield



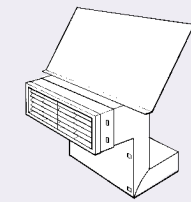
Cavitybrick ventilator



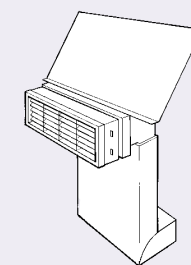
Straight sleeve+integral cavitytray



Cranked sleeve+integral cavitytray



Sleeve + extension to cranked sleeve to accommodate large step and height variations.



Air bricks sleeved to the under-floor void should be installed at 1500mm centres. Straight sleeves, cranked sleeves and sleeve extensions accommodate varying site levels and construction methods. Cross ventilation of the structure promotes evacuation. Air bricks without sleeves service the cavity void (specify Cavitybrick ventilator in selected colour, with appropriate sleeves). Separate cavitytray protection is not required when the Cavitybrick is protected adequately by the cavity barrier.

important note

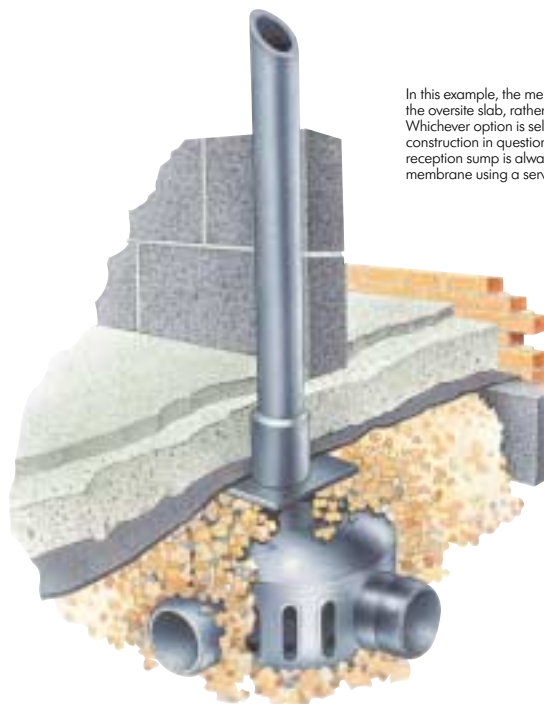
Cavitybricks must always be provided on methane emitting ground, but are classified as secondary protection on radon emitting ground. Site conditions should always be checked to determine number of Cavitybricks and frequency. Separate entries for these products appear in the relevant sections.

Gas Reception Sump

MEMBRANES

in brief...

- Passive or mechanical extraction
- Interconnection facility
- Permits use of standard pipe
- Compatible with other gas control products



In this example, the membrane is shown under the oversite slab, rather than above it. Whichever option is selected to suit the construction in question, the outlet from the reception sump is always linked to the membrane using a service pipe flashing.

designers' comments

NHBC 4.1-D5 stipulates a detailed investigation must be carried out when a site is suspected to have contamination hazards. Radon gas is such a hazard. The cost of incorporating a sump within the granular fill of a unit when constructing, is minimal. In Ireland it is mandatory for all new houses to have a sump.

technical observations

Inhalation/exist ratio exceeds 1:4. Single sump should be influencing an area beyond 250m². Single 100m pipe may service up to a maximum of 5 sumps, arranged as four spurs off main sump.

use

To service evacuation of gas from below integrity shield.

introduction

The gas reception sump when positioned below a floor slab (incorporating an integrity shield in the form of membranes and barriers), provides a passive gas exit route via a ventilation stack.

gas reception sump

The gas reception sump is designed to be incorporated within the granular fill, beneath the floor slab. The reception sump receives gas from underneath the building and promotes passive discharge via a vertical 110mm PVC ventilation stack. The stack is terminated above the roof finish with a tile/slate external roof ventilator.



Roof ventilators are available to suit roof finishes of slate or tile. Safe discharge of gas is at high level.

Suitable for new-build or existing properties, the reception sump may service up to 250m² floor area, positioned in the most

central location to promote even/optimum evacuation. The sump has integral inhalation apertures and inlet/outlet portholes to permit spur connection to adjoining sumps should the size or layout of the property dictate. A maximum of 5 reception sumps is permitted per 110mm ventilation stack. Where appropriate and if necessary, mechanical extraction can be achieved by the introduction of a powered fan, sited in the roof space. Where sub-floor depressurisation is created using a gas reception sump, it is recommended that the sump should not influence an area exceeding 250m². Sumps should be positioned centrally and the serviced area should not exceed a distance from the sump of 15 metres. To promote maximum depressurisation, fill used underneath the slab around the sump should not contain excessive fines. In calculating the performance of sub-floor depressurisation, it is assumed the water table is not high and that any measures to exhaust gases will not be influenced by the waterlogged/flooded areas.

sizes

Sump approximately 510mm x 240mm plus porthole

projections which permit connection to 110mm standard vent/stack pipe. Inhalation apertures exit ratio exceeds 4 to 1 for optimum performance. Roof Tile Universal Ventilator and Roof Slate Universal Ventilator are described elsewhere within this manual.

bill of quantity wording

Gas reception sump by Cavity Trays of Yeovil, Somerset BA22 8HU (01935 474769). Position sump centrally to service area not exceeding 250 m². Connect extraction stack pipe. Spur connect additional sumps to service static pockets or sub-floor areas as appropriate. Ensure fill used around sump does not include excessive fines. Observe manufacturer's instructions which accompany every delivery. Gas reception sump total number = Roof Tile Universal Ventilator and/or Roof Slate Universal Ventilator by Cavity Trays of Yeovil, Somerset BA22 8HU (01935 474769). Introduce ventilator in accordance with manufacturer's instructions which accompany every consignment. Connect to ventilation pipe using ventilator adapter link. Total number of Universal Roof Ventilators for tile/slate roof =

building regulations

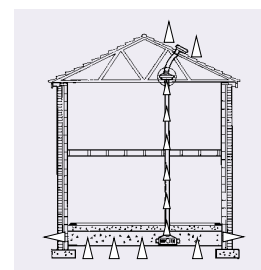
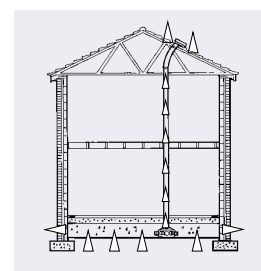
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ordering

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related products and applications

Refer to all products in this section.



A reception sump may service up to 250m² of floor area.