

NHBC Risk Guide

Radon/Gas protection (Revised May 2020)

(Refer BR 211, BR 414, GBG 74 and CIRIA 735)

Site ref: Site manager: Inspector:

Date: Signature: Signature:

Radon protection		
Is radon gas present?		Yes / No
If unsure, check with NHBC surveyor / engineer for clarification		
Please specify floor design and level of protection required:		
	Ground bearing	Suspended
Basic:		
Full:		
<p>Note: Where high radon protection is required, depressurisation/ventilation (either a radon sump or a ventilated subfloor void) should be provided below the level of the radon barrier.</p> <p>Note: If the site is in an area known for a high or fluctuating water table, there is a risk that radon sumps may become waterlogged. As such, tanking should be used to prevent water ingress and provide radon protection.</p> <p>Note: For acceptable radon solutions, please refer to BR211 Radon; Guidance on protective measures for new dwellings 2015 edition.</p>		
Please specify the membrane barrier to be installed:		
Note: If a recycled product is being used, ensure that it provides the same or better level of protection and longevity as that offered by 300 micrometre (1200 gauge) virgin polyethylene.		

Other gas protection			
Is methane/carbon dioxide or other hazardous gas (i.e. Hydrocarbons) present?			Yes / No
If unsure, check with NHBC surveyor / engineer for clarification			
Has the level of gas regime been defined?	Yes / No	Amber 1	Amber 2
		Moderate Risk ← → High Risk	
		CS2	CS3
<p>Note: Ensure the gas risk assessment report has been accepted by NHBC Surveyor/Engineer.</p> <p>Note: Amber2/CS3 gas regimes are considered high risk. It is essential that the gas risk assessment & construction detail is agreed in advance of works.</p> <p>Note: Verification of measures will be requested for CS3/Amber2 sites. The verification plan should be discussed in advance of construction.</p> <p>Note: The opportunity to provide post construction evidence will be difficult, costly & disruptive.</p>			

Gas protection measures			
Have gas protection measures been agreed?			Yes / No
Please specify floor design, membrane specification, sub slab ventilation and ventilator requirements:			
		Ground bearing	Suspended
Membrane specification	Straight Polymeric		
	Reinforced product		
	Multi-layer with aluminium insert		
	Hydrocarbon		
	Specialist membrane		
<p>Note: Minimum 1200gauge. Technical specification datasheets should provide test permeation data.</p> <p>Note: Only virgin products (non-recycled) to be used.</p> <p>Note: Membrane should be suitable for level of gas risk, nature of construction & durable.</p> <p>Note: Specialist membrane may be required where hydrocarbon vapours are present.</p>			
Sub slab ventilation	Clear void		
	Geostrips		
	Void former		
	Granular venting blanket		
	Venting pipes		
Ventilators	Air bricks		
	Vent boxes		
	Other		
<p>Note: Sub Slab ventilation (or pressure relief system) is required where gas protection measures are needed.</p> <p>Note: A specialist system will be required where ground bearing slabs adopted</p> <p>Note: The layout & connectors require specialist design.</p> <p>Note: Granular blankets with venting pipes require specialist design.</p> <p>Note: If the site is in an area known for a high or fluctuating water table, there is a risk that sub slab ventilation may become waterlogged & specialist advice is required.</p>			

Has a specialist installer been employed to install the barrier system?

Yes / No

Note: For site classed as Amber 2 or CS3, operatives should be suitably qualified. An NVO Level 2 qualification is one example of specialist qualification.
 Note: In all instances the installer should be familiar & appropriately experienced in gas membrane installations.
 Note: Third party verification is required for Amber2/CS3 gas regime sites. The verifier should not be the installer.

General requirements and considerations for radon and other gas protection

The barrier should be continuous across the whole plan of the building, including:

- taking it through or under internal wall and external walls,
- continuing across party or separating walls,
- provide an air tight seal around any penetrations through the barrier,
- Tapes and jointing should be specified in the design.

Where the barrier crosses the cavity, a cavity tray should be formed to prevent the ingress of water

Ensure the following where subfloor ventilation is provided:



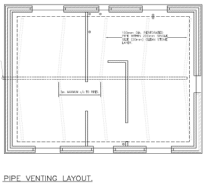
- air bricks are not restricted e.g. by raised external ground levels, meter boxes etc.
- they are positioned at 2m maximum centres, not more than 450mm from corners and installed on two opposite sides
- the joints between the upper and lower halves of periscope subfloor ventilators are taped

Provide temporary/permanent protection to prevent damage during installation or by follow-on trades




Membranes

✗ 	✓ 	✓ 
Ensure product is sufficiently durable to withstand the construction process.	Specialist installers may be required to joint thicker products.	Specialist membranes may be required. Taped seams may not be appropriate.




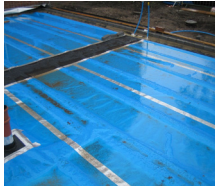


Ventilation

✓ 	✗ 	✗  <small>PIPE VENTING LAYOUT</small>
Specialist venting solution required for ground bearing slabs.	Sub slab voids should be clear of debris.	Venting pipes should be interleaved to prevent short circuiting & have more than one inlet & outlet point.

Ventilators

✗ 	✗ 	✗ 
Ensure telescopic ventilators are adequate. Photo shows ventilator too short & disconnected.	Vents should not be susceptible to clogging. Refer to Technical Guidance 6.1/27.	Planting proposals must consider air brick positions & not hinder air flow.

Installation

✓ 	✗ 	✓ 
Vertical walls & steps require specialist products & knowledge/skills to install.	The product needs sufficient strength, detailing & adherence across steps.	Preformed components offer solutions for difficult detailing.
✓ 	✗ 	✗ 
Thicker membranes advisable under position of sleeper walls.	Timber frame sole plate must not damage membrane integrity.	Weld temperatures are critical. Example shows burning of membrane.