

SINTEF Building and Infrastructure confirms that

## Visqueen RadonBLOK

has been found to be fit for use in Norway and to meet the provisions regarding product documentation given in the regulation relating to the marketing of products for construction works (DOK) and regulations on technical requirements for building works (TEK), with the properties, fields of application and conditions for use as stated in this document

### 1. Holder of the approval

Visqueen Building Products  
 Heanor Gate Industrial Estate  
 Derbyshire, UK

### 2. Product description

Visqueen RadonBLOK is a red co-polymer thermoplastic. The membrane is jointed with Visqueen Double sided Jointing Tape (butyl tape) and Visqueen Pro Single Sided Jointing tape (crossweave glassfibre reinforced tape).

Table 1  
 Dimension and tolerances for Visqueen RadonBLOK

Designation	Value
Thickness	0,38 mm
Weight	0,366 kg/m <sup>2</sup> ± 10 %
Width	4 m ± 2,5 %
Roll length	20 m <sup>1)</sup> + 10 / - 0 %

<sup>1)</sup> Other dimensions are available on request

As supplementary components to the radon membrane, the following are supplied:

- Visqueen Double Sided Jointing Tape (blue butyl) for bonding membranes together. A low Temperature (LT) option can also be delivered
- Visqueen Pro Single Sided Jointing Tape (crossweave glassfibre) for sealing laps.
- Visqueen Top Hat Units for pipe penetrations
- Visqueen Pre-formed Units for simplify detailing at corners etc.
- Visqueen Axiom Uniseal for sealing clusters of pipe penetrations.
- Visqueen Internal and External Corner cloaks for sealing of corners.

### 3. Fields of application

Visqueen RadonBLOK can be used as protection towards radon in applications type B as shown in SINTEF Building Research Design guide 520.706, provided that the conditions as described in chapter 6 in this document are followed. Alternative positioning of radon membranes are shown in Fig. 1.

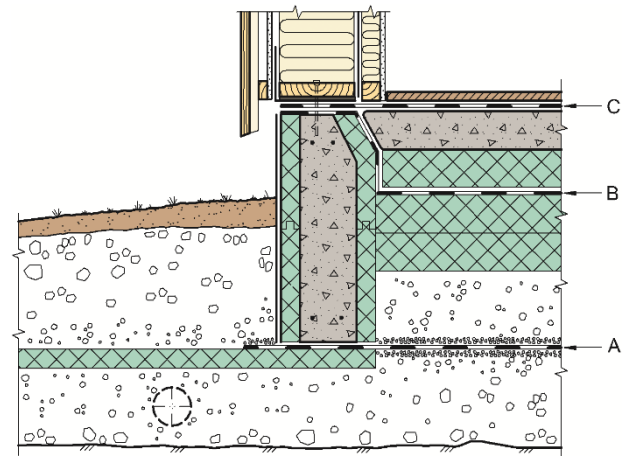


Fig. 1  
 Alternative positioning of radon membranes in different applications. Visqueen RadonBLOK can be used in use application types B.

### 4. Properties

#### Material properties

Product characteristics for fresh material are shown in Table 2.

#### Air tightness

Visqueen RadonBLOK is tested for performance in relation to air tightness for joints and details with satisfactory results.

#### Properties related to fire

Visqueen RadonBLOK is not classified according to EN 13501-1.

#### Durability

Visqueen RadonBLOK is assessed to have satisfactory durability when the product is used as specified in this Technical Approval document.

Table 2

Product characteristics for Visqueen RadonBLOK

Property	Test-method	Control limits <sup>1)</sup>	Unit
Radontransmission <sup>3)</sup>	SP-method 3873	$2 \cdot 10^{-8}$	m/s
Radon resistance		$5 \cdot 10^7$	s/m
Air tightness - construction <sup>2)3)</sup>	NBI-method 167/01	$\leq 5$	l/min
Flexibility at low temperature	EN 1109	$\leq - 30$	°C
Dimensional stability	EN 1107-1	$\pm 0,5$	%
- longitudinally		$\pm 0,5$	%
Resistance to tearing	EN 12310-1	$\geq 150$	N
- longitudinally		$\geq 150$	N
Tensile strength	EN 12311-1	$\geq 350$	N/ 50 mm
- longitudinally		$\geq 350$	N/ 50 mm
Elongation	EN 12311-1	$\geq 300$	%
- longitudinally		$\geq 300$	%
Shear resistance of joints	EN 12317-1	$\geq 200$	N/50 mm
Water vapour transmission properties <sup>3)</sup>	EN ISO 12572	$5,22 \cdot 10^{11}$ 76,7	m <sup>2</sup> sPa/kg m ekv. air layer
Resistance to impact	EN 12691:2001	$\leq 30$	mm diameter
- Soft underlay - cylinder			
Resistance to static loading	EN 12730:2001(A)	$\geq 10$	kg
- Soft underlay			

<sup>1)</sup> The declared values are control limits both for internal control at the producer and for supervising control

<sup>2)</sup> Calculated at a pressure difference of 30 Pa

<sup>3)</sup> Result from type testing

## 5. Environmental aspects

### *Chemicals hazardous to health and environment*

The product contains no hazardous substances with priority in quantities that pose any increased risk for human health and environment. Chemicals with priority include CMR, PBT or vPvB substances.

### *Waste treatment/recycling*

The product shall be sorted as residual waste. The product shall be delivered to an authorized waste treatment plant for energy recovery.

Non hardened Visqueen Axiom Uniseal is defined as hazardous waste (according to the Norwegian Waste Regulation (Avfallsforskriften)). The product must be sorted as hazardous waste on the building site, and be delivered to an authorized treatment plant for hazardous waste. The dried product is not hazardous waste.

### *Environmental declaration*

No environmental declaration (EPD) has been worked out for the product.

## 6. Special conditions for use and installation

### *Application type B (Fig. 2)*

The membrane has to be installed on a pre-leveled surface of insulation. The membrane has then to be protected with insulation also at the top side. The insulation has finally to be protected with a plastic film at the top (alternatively another protection type of film or an antifriction layer). At least two thirds of the insulation thickness should be

installed at the underside of the membrane. The membrane has to be installed continuous over the top of the foundation to ensure air tight connections between the foundation and the floor.

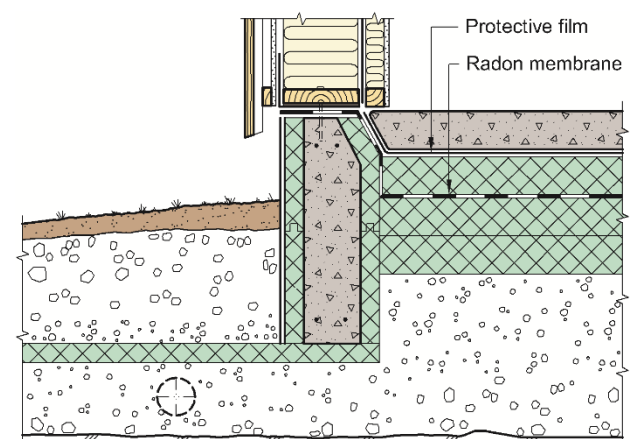


Fig. 2  
Example of positioning radon barrier in application type B.  
Slab on ground together with the foundation

**Installation**

The membrane must be jointed with Visqueen Double sided tape (butyl tape) by at least 150 mm overlap. The membrane joints shall be sealed with Visqueen Pro Single Sided Jointing tape (crossweave glassfibre reinforced tape).

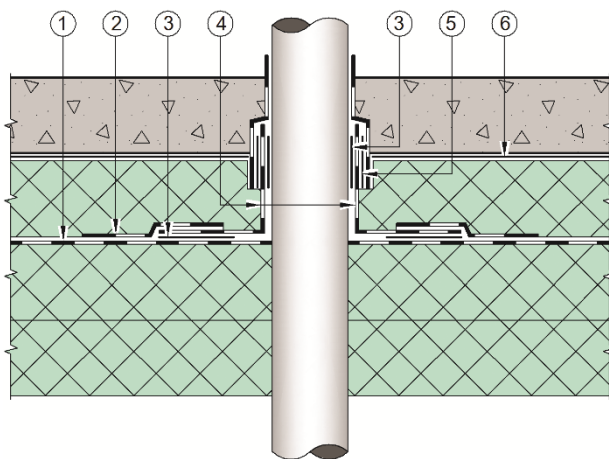
Corners should be constructed using Visqueen Internal and External Corner cloaks. Corners can also be constructed of RadonBlok membrane if corners cloaks do not fit the application.

Pipe penetrations should be sealed using Visqueen Top Hat Units.

Cluster of pipe penetrations have to be sealed with Visqueen Axiom Uniseal.

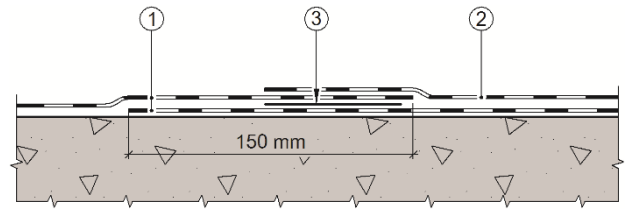
The temperature during installation should be at least + 5 °C. At lower temperatures tapes may be softened by storage beforehand at room temperature and/or with hot air.

The performance must ensure that all joints, penetrations and transitions between floor and wall are airtight. See also SINTEF Building Research Design Guide 520.706.



1	Visqueen Top Hat Unit	4	VisqueenPro Singled Sided Jointing Tape
2	Visqueen RadonBlok Membrane	5	Metal band
3	VisqueenPro Double Sided Jointing Tape	6	Vapour Barrier

Fig. 4  
Visqueen Top Hat Unit for sealing of pipe penetration



1	Visqueen RadonBlok Membrane	3	VisqueenPro Double Sided Jointing Tape
2	VisqueenPro Singled Sided Jointing Tape		

Fig. 5  
Joint of radon membrane with Visqueen Double sided tape and Visqueen Pro Single Sided Jointing tape

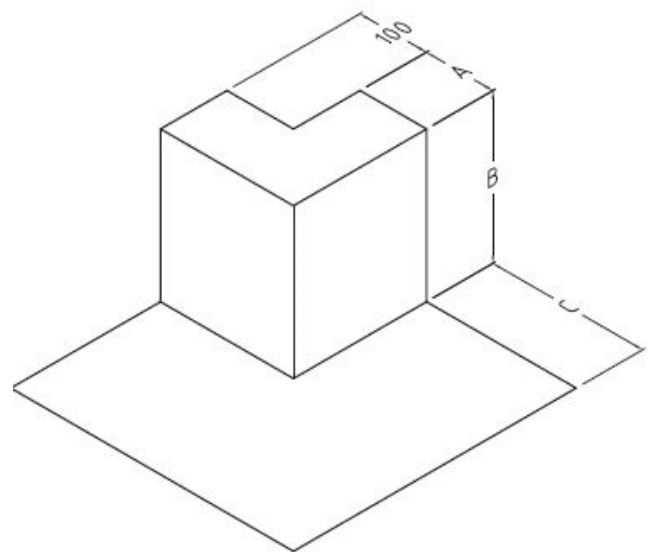


Fig. 6  
Visqueen External Corner cloaks

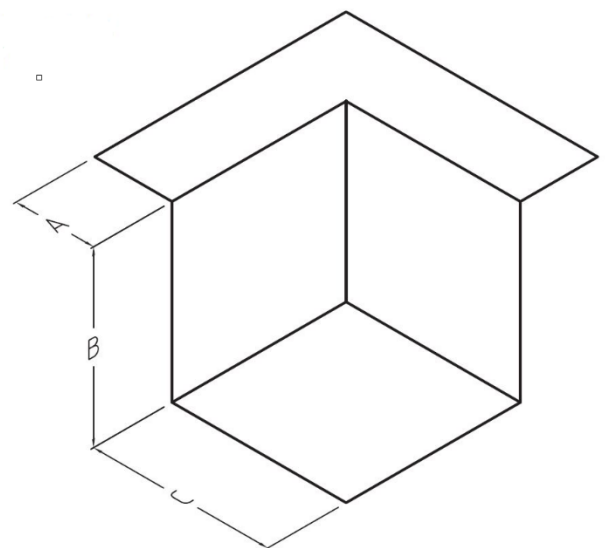


Fig. 7  
Visqueen Internal Corner unit

*Underlay and protection*

It is important to avoid damaging of the radon membrane by sharp objects or objects that are being trampled down in the membrane during the construction period. When the membrane is installed right below a concrete slab, it's recommended to protect the membrane at the top side with a protection layer of minimum 0,8 mm thick plastic membrane. The membrane has to be installed in such way that it's not stucked and, in turn, teared to pieces by smaller movements.

*Floor heating*

Heating cables shall not be placed directly on the membrane, and there shall be a minimum of 5 mm non-combustible material between the heating cables and the membrane.

*Radon membrane as vapour barrier*

Radon membrane in use group B will replace the plastic membrane as vapour barrier, because the radon membrane will work both as vapour barrier and radon membrane. The plastic membrane with function as protection must still be used as described.

*Water in the construction pit*

When the insulation is placed above the radon membrane it is a risk of accumulation of water in the construction pit during the construction period. It must therefore be taken action to avoid such water accumulation. Alternatively actions can be made to drain the water. To secure air- and radontightness, it is important that the drainage solution can be closed by the supplementary Visqueen components when the construction period is finished.

*Storage*

Visqueen RadonBLOK shall be stored dry and protected against direct UV-radiation, and placed on rolls horizontal on pallet.

**7. Factory production control**

The product is produced by Visqueen Building Products, Heanor Gate Industrial Estate, Derbyshire, United Kingdom.

The holder of the approval is responsible for the factory production control in order to ensure that the product is produced in accordance with the preconditions applying to this approval.

The manufacturing of the product is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

Visqueen have a quality assurance system which is certified according ISO 9001 by NSF Knight Limited certificate 4560.

**8. Basis for the approval**

The approval is based on product characteristics which are documented in the following reports:

- SINTEF Byggforsk, report 3D1308, dated 17.08.2012 (material properties, FTIR)
- SINTEF Byggforsk, report 3D1308 A, dated 17.08.201 (air tightness)
- SP Sveriges Provnings- och Forskningsinstitut: Report PX06622 dated 03.11.2010. (radon resistance)
- SP Sveriges Provnings- och Forskningsinstitut: Report FX205535 dated 20.04.2012. (emission)
- BRE, report 216775/R1 dated 01.07.2004 (material properties)

**9. Marking**

All rolls are marked with the producers name, product description, dimensions and production time. The approval mark for SINTEF Technical Approval No. 20228 may also be used.



Approval mark

**10. Liability**

The holder/manufacturer has sole product responsibility according to existing law. Claims resulting from the use of the product cannot be brought against SINTEF beyond the provisions of Norwegian Standard NS 8402

for SINTEF Building and Infrastructure

Hans Boye Skogstad  
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