

SINTEF Technical Approval

TG 20228

Issued first time: 19.09.2012
 Revised: 02.02.2024
 Amended: 22.05.2025
 Valid until: 01.12.2027
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SINTEF 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
 Heanor Gate Industrial Estate
 Derbyshire, UK
www.visqueen.com

2. Product description

Visqueen RadonBLOK is a rollproduct of co-polymer thermoplastic. The colour is red. 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
 Dimensions and tolerances for Visqueen RadonBLOK

Property	Value	
Thickness	0,5 mm	- 2% / + 10 %
Weight	0,48 kg/m ²	- 2% / + 10 %
Width of membrane	4 m	± 2,5 %
Roll width	1 m / 2 m	
Roll length	20 m ¹⁾	+ 10 / - 0 %

¹⁾ Other dimensions are available on request

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

- Visqueen Double Sided Jointing Tape (blue butyl) for bonding membranes together.
- Visqueen Pro Single Sided Jointing Tape (crossweave glassfibre) for sealing laps.
- Visqueen Top Hat Units for pipe penetrations
- Visqueen Internal and External Corner Cloaks (pre-formed)
- Visqueen Axiom Uniseal for sealing clusters of pipe penetrations.

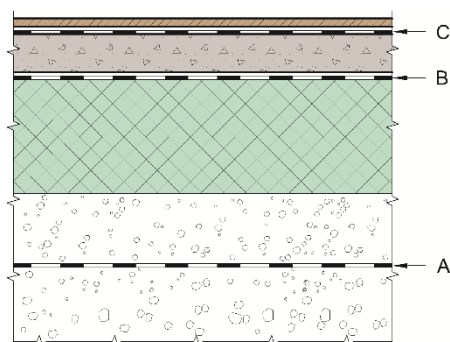


Fig. 1
 Alternative positioning of radon membranes in different applications. Visqueen RadonBLOK can be used in use application types B.

3. Fields of application

Visqueen RadonBLOK can be used as protection against radon in application area B as shown in SINTEF Building Research Design guide 520.706, provided that the conditions described in chapter 6 in this document are followed. Principal positioning of radon membranes are shown in figure 1.

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 as shown in Table 2.

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.

SINTEF is the Norwegian member of European Organisation for Technical Assessment, EOTA, and European Union of Agrément, UEAtc

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Table 2
Product characteristics for Visqueen RadonBLOK

Property	Test method EN	Control limits ¹⁾	Unit
Radontransmission ³⁾	SP-method 3873	$2 \cdot 10^{-8}$	m/s
Radon resistance		$5 \cdot 10^7$	s/m
Air tightness - construction ²⁾³⁾	NBI-method 167/01	≤ 5	l/min
Flexibility at low temperature	495-5	≤ -30	°C
Dimensional stability	1107-2	± 1	%
		± 1	%
Resistance to tearing	12310-2	≥ 75	N
		≥ 85	N
Tensile strength	12311-2 (B)	≥ 425	N/50 mm
		≥ 425	N/50 mm
Elongation	12311-2 (B)	≥ 550	%
		≥ 600	%
Shear resistance of joints	12317-2	≥ 200	N/50 mm
Water vapour transmission properties ³⁾	ISO 12572	$5,22 \cdot 10^{11}$ 76,7	m ² sPa/kg m eqv. air layer
Resistance to impact	12691 12691:2001	≥ 500	mm height
- Hard support - spherical drop mass		-	
- Soft underlay - cylindrical drop mass			
Resistance to static loading	12730:2001(A)	≥ 10	kg
- Soft underlay			

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

²⁾ Calculated at a pressure difference of 30 Pa

³⁾ Result from type testing

L = Longitudinal

T = Transversal

5. Environmental aspects

Substances hazardous to health and environment

Visqueen RadonBLOK 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.

Application of non-hardened product may cause the isocyanates to be released. When polyurethane/polyisocyanurate is heated to 150-200 degrees, isocyanates can be released. Isocyanates may cause allergies and asthma. Products containing isocyanates must be treated with special care when used.

Waste treatment/recycling

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

Non hardened Visqueen Axion 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.

6. Special conditions for use and installation

Application area B (fig. 2)

The membrane has to be installed on a pre-leveled surface of heat insulation which is secured against displacement. The top side of the membrane shall be protected with an antifriction and protective layer of minimum 0,2 mm thick plastic foil with mechanical properties and alkaline resistance corresponding to a radon membrane for use in application area C or a vapour barrier for floor installation with a SINTEF Technical Approval.

The membrane shall be installed continuously over the top of the foundation to ensure airtight connections between the foundation and the floor.

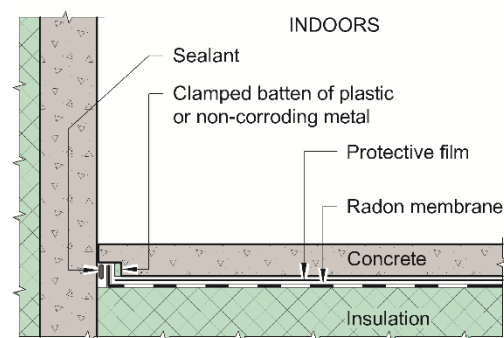
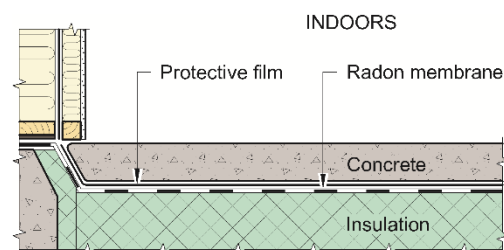


Fig. 2
Example of positioning of radon membrane in application area B. Slab on ground together with the foundation and concrete wall.

Installation

The membrane shall be jointed with Visqueen Double sided tape (butyl tape) with at least 150 mm overlap. The membrane joints shall be sealed with Visqueen Pro Single Sided Jointing tape (crossweave glassfibre reinforced tape). The temperature during installation should be at least + 5 °C.

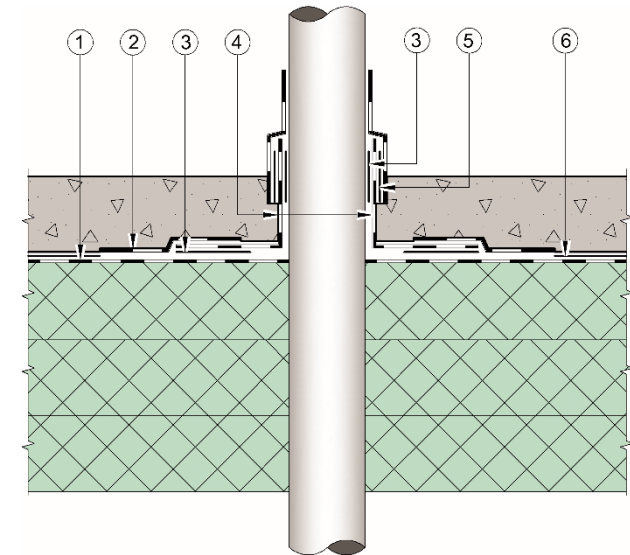
Corners should be constructed using pre-formed Visqueen Internal and External Corner cloaks. The corner cloaks are attached to the membrane using Visqueen Double Sided Jointing Tape. Corners can also be constructed of RadonBlok membrane if the pre-formed corner cloaks do not fit the application.

Pipe penetrations shall be sealed using Visqueen Top Hat Units. The Top Hat Units are attached to the membrane using Visqueen Double Sided Jointing Tape.

Cluster of pipe penetrations shall be sealed with Visqueen Axiom Uniseal. The chosen formwork solution must adhere to the membrane and ensure sufficient filling height for the sealant. The sufficient filling height will be product-specific and described in the sealant's documentation. The need for refilling of sealant must always be checked and is particularly important for sealants with long curing time.

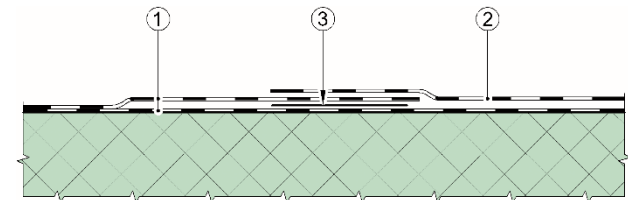
It must be checked that all joints, penetrations and transitions between floor and wall are airtight and have not opened as a result of loads and stresses during the construction period before the membrane is built in.

The design shall ensure that all joints, penetrations and transitions between floor and wall are airtight. The design should be according to the principles shown in SINTEF Building Research Design Guide 520.706 and 701.706.



1	Visqueen RadonBlok Membrane	4	Visqueen Top Hat Unit for pipe penetration
2	Visqueen Pro Single Sided Jointing Tape	5	Metal band
3	Visqueen Double Sided Jointing Tape	6	Antifriction and protective layer

Fig. 3
Visqueen Top Hat Unit for sealing of pipe penetration



1	Visqueen RadonBlok Membrane	3	Visqueen Double Sided Jointing Tape
2	Visqueen Pro Single Sided Jointing Tape		

Fig. 4
Joint of Visqueen RadonBLOK performed with Visqueen Pro Single Sided Jointing Tape and Visqueen Double Sided Jointing Tape.

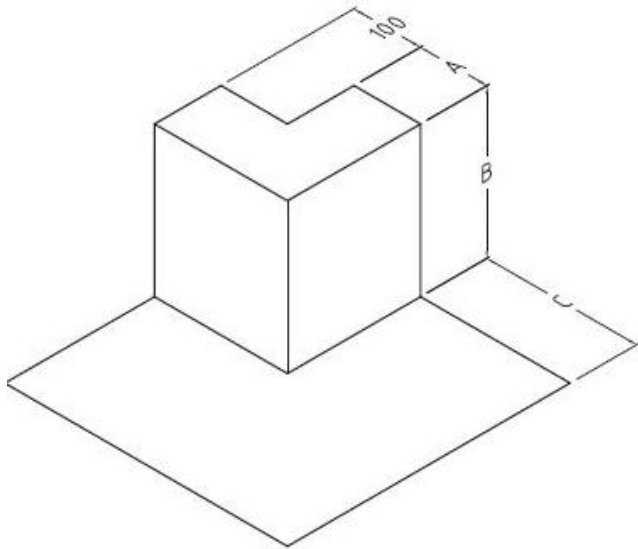


Fig. 5
Visqueen External Corner Cloak. The corner cloak is attached to the membrane using Visqueen Double Sided Jointing Tape.

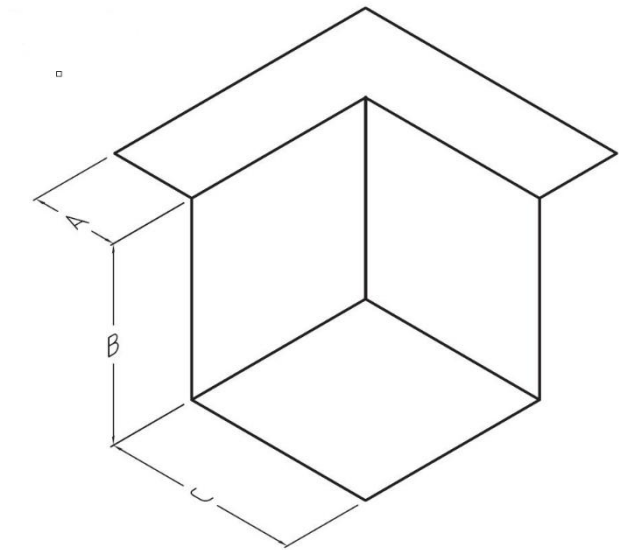


Fig. 6
Visqueen Internal Corner Cloak. The corner cloak is attached to the membrane using Visqueen Double Sided Jointing Tape.

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.

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. After installation, the membrane shall not be locked for movement or span over cavities as this can cause the membrane or its joints to tear when exposed to loads or shrinkage. Reinforcement chairs or fasteners for floor heating that may damage the membrane shall not be used.

Radon membrane as vapour barrier

Radon membrane in application areas 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.

Storage

Visqueen RadonBLOK shall be stored dry and protected against direct UV-radiation before use.

7. Factory production control

Visqueen RadonBLOK 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 Visqueen RadonBLOK is produced in accordance with the preconditions applying to this approval.

The manufacturing of the product and the manufacturer's system for factory production control (FPC) is subject to continuous surveillance in accordance with the contract regarding SINTEF Technical Approval.

Visqueen have a quality management system which is certified according ISO 9001.

8. Basis for the approval

The evaluation of Visqueen RadonBLOK is based on reports owned by the holder of the approval.

The evaluation of design and technical solutions are based on recommendations given in SINTEF Building Research Design Guides.

9. Marking

All rolls are marked with the producers name, product description, dimensions and production time.

The approval mark for SINTEF Technical Approval TG 20228 may also be used.

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

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Godkjenningsleder