

SINTEF Building and Infrastructure confirms that

## RadonStop 400

meets the provisions regarding product documentation given in Norwegian building regulations, with properties, fields of application and conditions as stated in this document

### 1. Holder of the approval

Isola as  
 Platon Factory  
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### 2. Manufacturer

Plasthill B.V., Weerlan 13, AH Hillegom, Netherlands

### 3. Product description

RadonStop 400 is a non-reinforced roll product of polyethylene film. The colour is dark green. The membrane is joined with sealer, sealing tape and overtape of butyl rubber.

Table 1

Dimensions and weight of RadonStop 400

Thickness	0.4 mm	±3 %
Weight	400 g/m <sup>2</sup>	±12 %
Width membrane/roll	4/2 m	-0 % +2 %
Roll length	25 m	-0 % +3 %

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

- Platon RadonStop 400 Sealing Tape (grey band of butyl rubber), width 30mm, for sealing of joints and details.
- Platon Sealer (grey butyl rubber elastic sealant), for sealing of joints and details.
- Platon RadonStop 400 Overtape (grey tape with butyl rubber band and fixed film cover), 60mm width, for sealing of joints and details.
- Platon Drain Gasket
- Platon Service Gasket for round pipes
- Platon 2 part Corner Cloak for square services and sealing of corners.

### 4. Fields of application

#### General

Radon membranes are used to reduce the transport of radon from the ground and up into buildings, and may be applied in one of three use groups as illustrated in fig. 1.

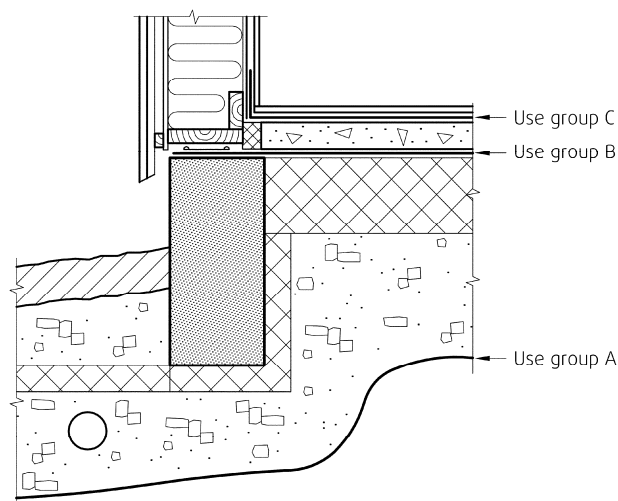


Fig. 1

Principle positioning of radon membranes in use groups. Examples of constructions are shown in fig. 2 to 5.

RadonStop 400 is intended for use in use group C, but may also be used in use group B provided the conditions as described in this approval document are met.

#### Use group B

In use group B, the radon membrane must be laid on a flat substrate of insulation. Fig. 2 and 3 show construction examples.

#### Use group C

In use group C, the radon membrane must be laid on a flat substrate for example of finished levelled concrete slab, and is part of a complete construction of the floor. Use in use group C is conditional on the membrane not being fixed. Fig. 4 and 5 show construction examples.

### 5. Properties

#### Material properties

Product properties for fresh material are shown in Table 2.

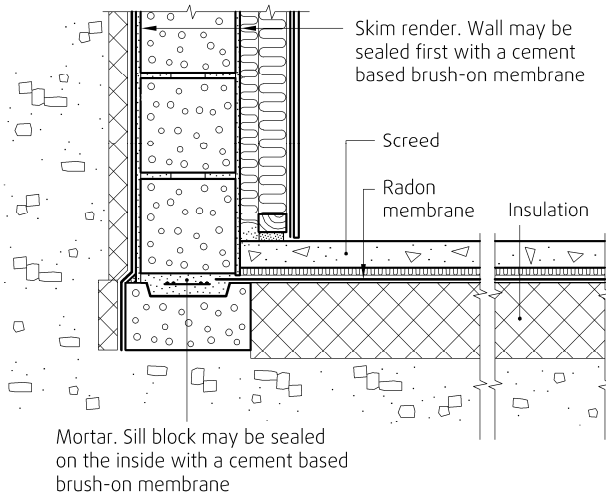


Fig. 2  
Example of use in use group B. Slab on ground, and masonry wall on ground.

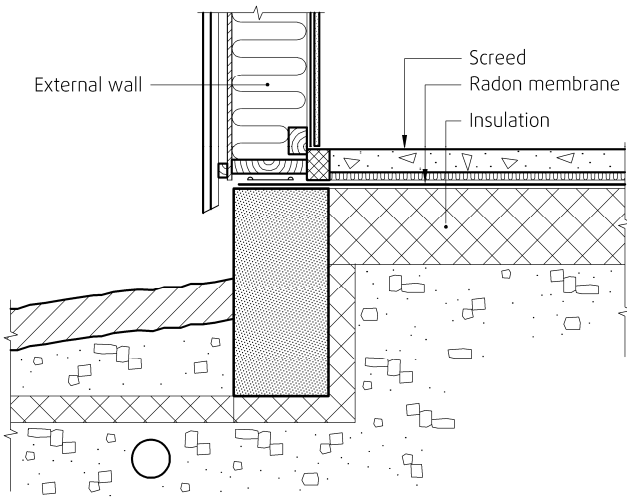


Fig. 3  
Example of use in use group B. Slab on ground with perimeter wall foundation.

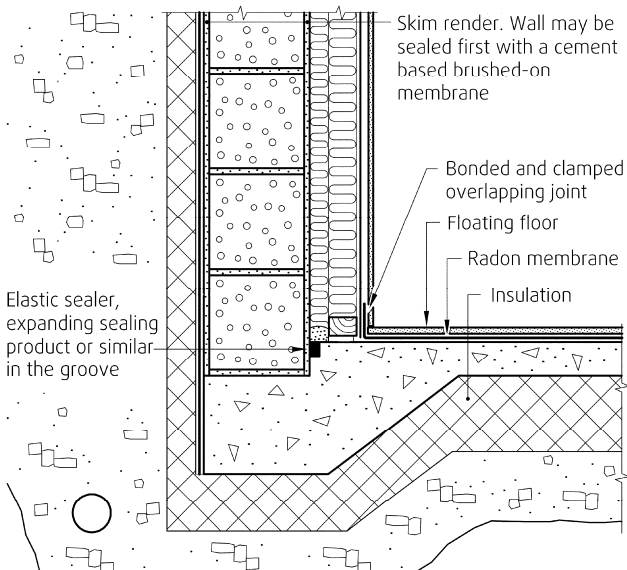


Fig. 4  
Example of use in use group C. Slab on ground with reinforced concrete slab edge and masonry wall.

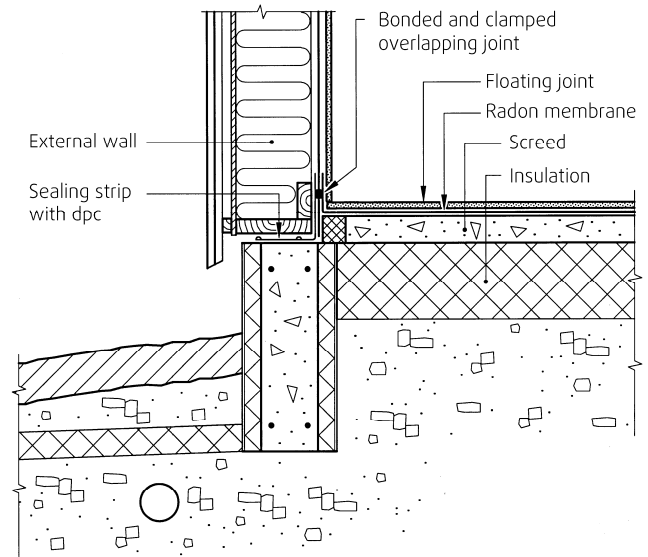


Fig. 5  
Example of use in use group C. Slab on ground with perimeter foundation wall.

Table 2  
Product properties for RadonStop 400 (control limits)

Properties	Value	Unit	Test method
Radon resistance	$5,8 \cdot 10^{11}$	$m^2 \cdot s \cdot Pa/kg$	SP-method (see cl. 8)
Tensile strength - longitudinal - transverse	400 400	N/50 mm N/50 mm	EN 12311-2
Elongation at break - longitudinal - transverse	600 700	% %	EN 12311-2
Shear strength in joint	> 100	N/50 mm	EN 12317-2
Dimensional stability - longitudinal - transverse	- 0,5 0,1	% %	EN1107-2
Foldability at low temperature	- 30	°C	EN 495-5
Tear strength (trapezoidal) - longitudinal - transverse	100 100	N N	EN 12310-2
Puncture resistance - static load - impact	100 30	N mm	EN 12730 EN 12691
Water vapour resistance	$700 \cdot 10^9$ $5,3 \cdot 10^6$ $s_d = 135$	$m^2 s Pa/kg$ s/m m	BS 3177
Air tightness - Construction	2*	l/min	NBI-method 167/01

1) Calculated at a pressure difference of 30 Pa

*Air tightness*

RadonStop 400 is tested for performance in relation to joints and details for membrane penetrations with satisfactory results as shown in Table 2.

*Reaction to fire*

RadonStop 400 is not classified in relation to fire.

*Durability*

The product has been tested for durability against alkaline dampness in accordance with EN 13984, Annex C (NT POLY 161). The membrane, including a joint with sealer and sealing tape of butyl, has been tested for durability at elevated temperature in accordance with NS-EN 1296. No significant changes in tensile strength and elongation at break, before and after exposure, were registered. Foldability at low temperature was not affected by thermal aging.

RadonStop 400 is assessed as having satisfactory durability when the product is used as specified in this approval document.

*Environmental declaration*

No separate environmental declaration is issued for RadonStop 400. The product does not contain any substances in the environmental authorities' OBS list on health and environmentally dangerous substances.

*Disposal and recycling*

The material may be recycled, or sent to a normal public disposal site after its working life has ended.

**6. Special conditions for use**

*Installation*

All joints and details at service penetrations and wall to floor junctions, shall be sealed so that they are airtight. The membrane shall be installed in accordance with the principles shown in SINTEF Building Research Design Guide 520.706.

RadonStop 400 shall be joined with sealing tape, sealer and overtape as shown in principle in fig. 6 to 10. Corners are constructed on site from RadonStop 400, if prefabricated corners do not fit in particular situations.

The sealing tape is 30mm in width, and the sealer strands shall not be thinner than 20mm.

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

*Trained operatives*

RadonStop 400 shall be installed by operatives or contractors who are approved by Isola as.

*Protection*

The membrane must be protected immediately after installation, so that it is not damaged by impact from sharp objects or by objects being pressed down into the membrane.

*Floor heating*

Electric heating cables must not be placed directly in contact with the membrane, and there shall be a minimum distance of 5 mm non-flammable material between the heating cables and the radon membrane.

*Storage*

RadonStop 400 shall be stored dry.

*Radon concentration*

RadonStop 400 should be used where the radon concentration does not exceed 0.9 MBq. However, ground conditions may change during the building's lifetime. Arrangements to allow for other action to reduce radon penetration at a later date should therefore be incorporated.

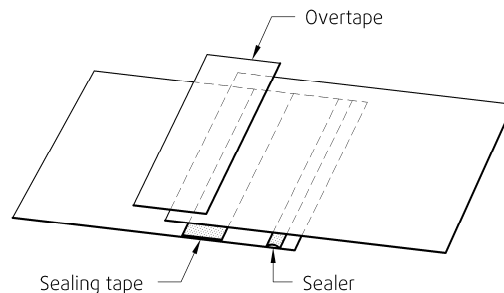


Fig. 6 RadonStop 400 is joined with sealing tape, sealer (or reverse order) and overtape.

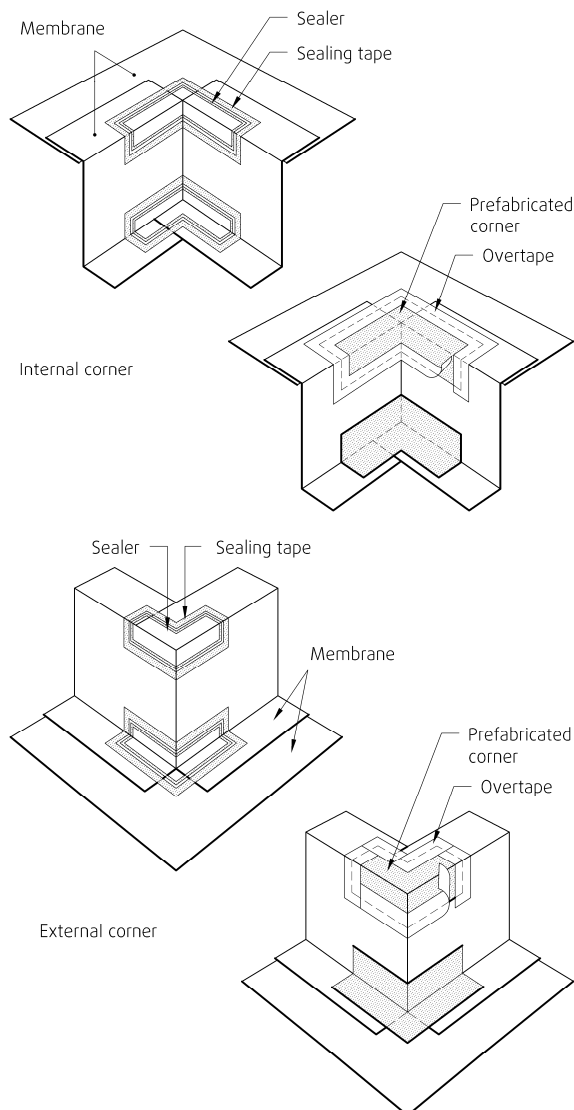


Fig. 7 Principle for installation of corners.

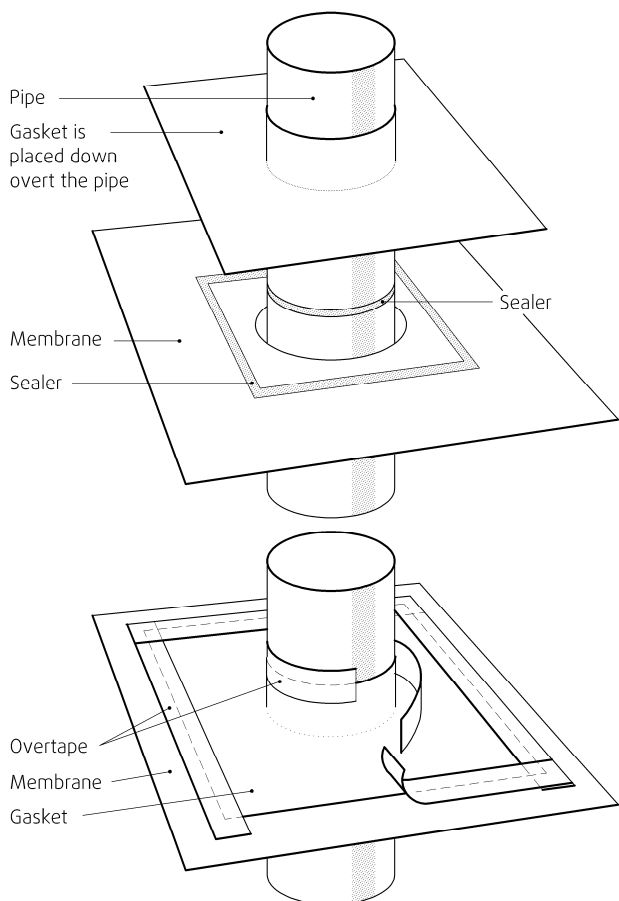


Fig. 8  
Principle for sealing around pipe details with gasket. The seal of the membrane penetration is completed with overtape. Where the pipe continues above the surface of the installation, the gasket may be cut and resealed.

**7. Factory production control**

RadonStop is subject to factory inspection of product and production control in accordance with a contract for SINTEF Technical Approval.

**8. Basis for the approval**

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

- Norwegian Building Research Institute. Report O 14319 dated 31.10.2004 (type testing).
- SP Technical Research Institute of Sweden: Report P301764 dated 13.05.2003. (radon resistance).

**9. Marking**

All rolls are marked with the supplier’s name, product description and date of manufacture. The approval mark for Technical Approval No. 2387 may also be used.

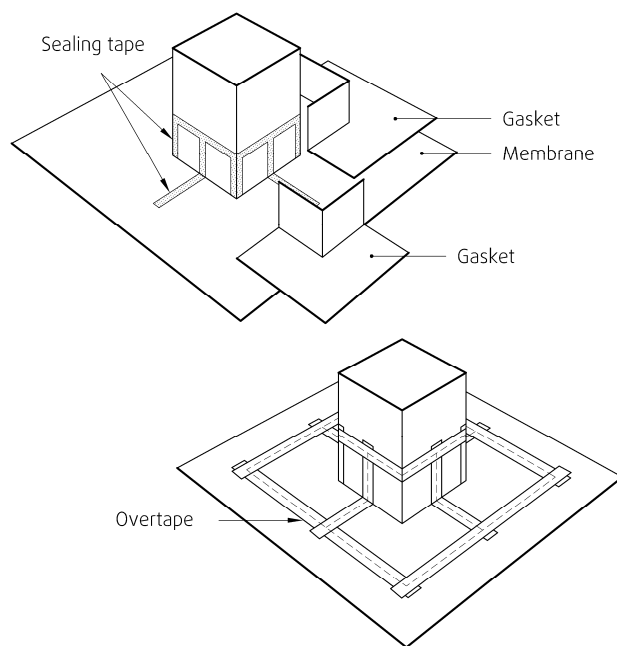


Fig. 9  
Sealing around square membrane penetrations. Special penetration details may be sealed by making a dilatation joint, casting around the detail, and sealing thereafter with elastic sealer, expanding sealing product or similar.



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

**11. Technical management**

Project manager for this approval is Kathinka Leikanger Friquin, SINTEF Building and Infrastructure, dep. Building materials and construction, Trondheim

for SINTEF Building and Infrastructure

Trond Ø. Ramstad  
Approval Manager