RADONTEC

AlphaBlock 4+

Processing instructions

New building waterproofing

October 2021



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1 Properties

The new radon-proof AlphaBlock 4+ film for indoor and outdoor applications.
Self-adhesive with integrated protective fleece.

2 Technical Data

tested according to	DIN EN 14909 DIN EN 13967	
Radon tightness test	Surface: passed Transition/adhesive point: passed	
Fire class	DIN EN ISO 11925-2 and EN 13501-1	
Fire behaviour	EN 1928 A+B: passed	
Water tightness	EN 1931: sD: ≥ 1500 m	
Water vapour permeability	EN 12691: procedure A passed	
Resistance to impact load	EN 12317-2: 215N	
Shear resistance of the joint	EN 12311-2 max. tractive force:	lengthways : ≥ 378 N transverse: ≥ 289 N lengthways : ≥ 16% transverse: ≥ 16%

	Stretch:	
Tensile elongation behaviour	EN 12730: ≤ 15 kg	
Resistance to static load	EN 12310-1	lengthways : ≥ 209 N transverse: ≥ 189 N
Tear resistance (nail shank)	EN 1296: passed EN 1931: passed	
Durability to ageing	EN 1847: passed EN 1928: passed	
Durability to chemicals	Hydrochloric acid 10% + Hydrochloric acid conc. + Sulphuric acid 10% + Sulphuric acid 80% + Nitric acid Nitric acid 5% + Nitric acid conc. + Phosphoric acid 10% + Boric acid 4% + Chromic acid 10% + Formic acid 5% + Acetic acid 5%ig - Lactic acid 5% + Sodium hydroxide 30% -	Ammonia 5% + Ammonia 25% + Saline solution 5% + Calcium chloride soluti Potassium carbonate s Tap water + Alcohol den. 5% + Alcohol den. 50% - Butanol + Glycerol + toluene - Carbon tetrachloride - trichloroethylene - perchloroethylene - Fuel oil, diesel oil +

	Potassium hydroxide 30% - petrol - HD oil +
Resistance to chemicals	EN 1548: passed EN 1928: passed
Compatibility with bitumen	EN 1850-2: passed
Visible defects	EN 1849-2: passed
Straightness	ca. 20 kg/roll
Weight	60 m
Length	1,20 m
Width	ca. 0,8 mm

3 Radon tightness certificate

IAF-Radioökologie GmbH has tested the AlphaBlock4+ for radon tightness. Not only the surface was tested, but also the transitions with the adhesive joints. Both tests were passed successfully and thus our self-adhesive AlphaBlock4+ radon protection film is "verifiably" radon-proof.



IAF - Radioökologie GmbH

Labor für Radionuklidanalytik | Radiologische Gutachten | Consulting

Bestimmung des Radon-Diffusionskoeffizienten und der Diffusionslänge einer Radonschutz-Folie

Auftraggeber:	RadonTec GmbH Hauptstraße 5 89426 Wittislingen
Projektname:	Bestimmung des Radon-Diffusionskoeffizienten und der Diffusionslänge für die Radonschutz-Folie „AlphaBlock® 4+"
Projektnummer:	210210-01
Auftragnehmer:	IAF-Radioökologie GmbH
Autor:	Dipl.-Ing. (BA) R. Baumert

DAkkS Deutsche Akkreditierungsstelle D-PL-11201-01-00

Die Akkreditierung gilt für die dargestellten Ergebnisse der Bestimmung der Radondiffusionskonstante von Dichtungsmaterialien (SOP 4.02, 2018-11). Die im Bericht enthaltenen Bewertungen basieren auf diesen Ergebnissen

Radeberg, den 19.03.2021

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4 Installation variants



The radon foil must be protected against any mechanical damage before, during and also after installation. Even the smallest holes can be entry paths for radon and prevent effective radon protection.



Depending on the installation method, an additional protective fleece may need to be laid.



Use rolled gravel or round gravel in the capillary-breaking layer to limit the risk of damage to the foil as much as possible.

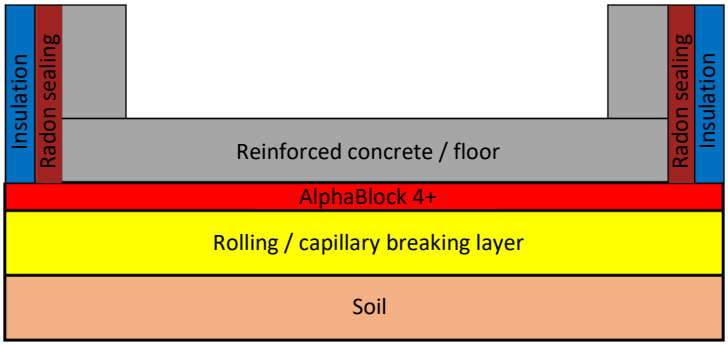
AlphaBlock 4+ radon foil can be installed outdoors in a number of different ways. In a new building, the AlphaBlock 4+ is best installed under the floor slab. The architect will then decide on the exact positioning of the AlphaBlock 4+ foil.

Below you will find a summary of the advantages and risks of the most common installation variants.

4.1 Between rolling and floor slab

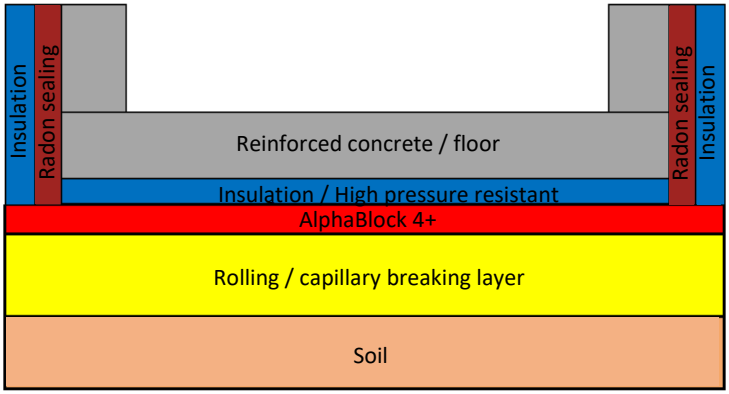
The installation of the AlphaBlock 4+ between the capillary breaking layer and the floor slab poses the greatest risk to the radon foil. The radon foil can be damaged by both the rolling and the reinforcement of the floor slab.

In this setup, the radon foil must be protected with protective fleece against the rolling and the concrete slab.



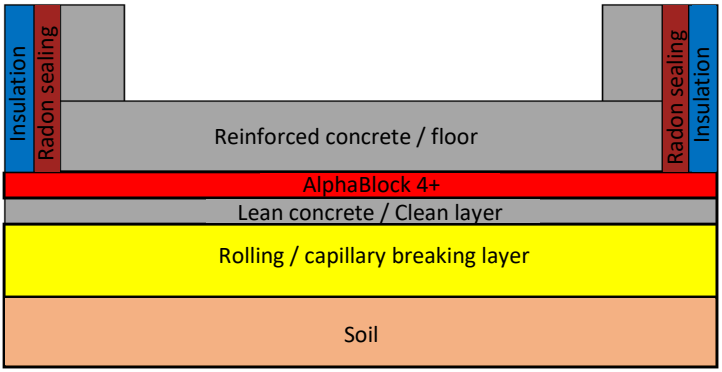
4.2 Between rolling and insulation

The AlphaBlock 4+ radon foil can be damaged by the rolling in this construction. Lay the protective fleece on top of the capillary-breaking layer. The insulation protects the foil against mechanical damage from above.



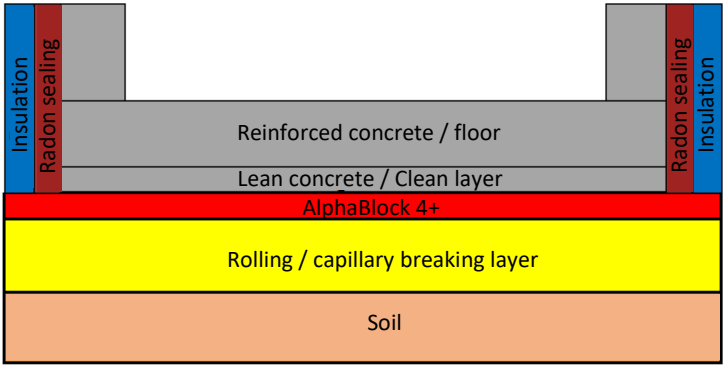
4.3 Between lean concrete and floor slab

The risk of damage to the AlphaBlock 4+ in this case again comes from the reinforcement in the floor slab. Lay the protective fleece over the radon foil. The lean concrete layer protects the foil against mechanical damage from below.



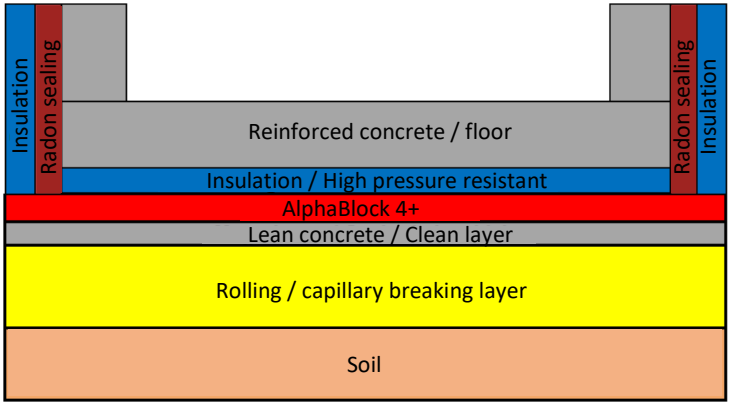
4.4 Between roll and lean concrete

If the radon foil AlphaBlock 4+ lies between the capillary-breaking layer and lean concrete, it can be damaged by the rolling. The lean concrete layer protects the foil against mechanical damage by the reinforcement from above.



4.5 Between lean concrete and insulation

If the radon foil is laid between lean concrete and insulation, there is the least risk of damage to the foil. The lean concrete layer protects the foil against mechanical damage from below, the insulation from above. No additional protective fleece is necessary.



5 Installation of the radon foil

The installation steps of the radon foil must be adapted according to the selected construction variant.

The variant with additional protective fleece underneath the radon foil is presented here as an example.

The substrate must be level and as far as possible free of sharp objects and sharp edges.

Pipe inlets should ideally be installed at floor level to facilitate the installation of the radon foil.

5.1 Protective fleece

First spread out the protective fleece on the level floor. Unroll the protective fleece in strips and align it accordingly.



Pipe entries must be cut free as accurately as possible.



Bonding the individual fleece webs together serves to fix them in place and facilitates laying. Any commercially available adhesive tape can be used for this purpose.



Work with the wind direction so that it does not catch in the already laid webs and make laying more difficult.

Lay the protective fleece over the entire surface and then proceed to laying the radon foil.

5.2 AlphaBlock 4+

Damage to the AlphaBlock 4+ must be avoided at all costs. Cracks, holes, etc. represent entry paths for radon and must be repaired in a radon-proof manner.

Make sure that there are no sharp stones or other sharp edges in the sole of your shoes. Our recommendation is to put the film in socks or shoes with soft rubber soles.

Unroll the AlphaBlock 4+ with the protective fleece facing down. There are adhesive strips on both sides, which are covered with a yellow protective film.



The radon foil must protrude at least 50cm beyond the floor slab at the sides.

Also unroll the radon foil in strips, align it and weigh it down so that it does not slip.

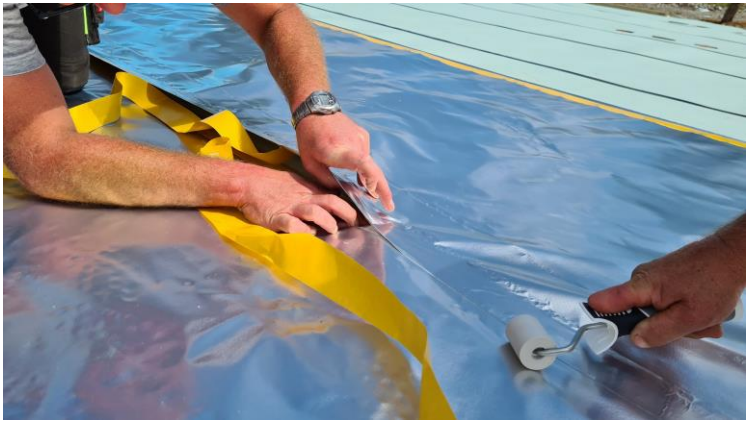
Then unroll the second sheet.

The adhesive strips must lie directly on top of each other. Align the film accordingly.

Now remove the yellow protective film from both adhesive strips.



The easiest way to do this is to pull off both protective films at the same time. However, make sure that the film is optimally aligned. After the adhesive surfaces have touched, a correction is hardly possible.



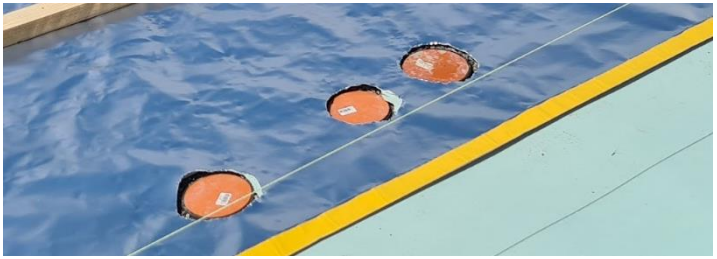
Now press both glued areas/foils firmly together. The easiest way to do this is with a silicone roller. It is important that the bond does not have any large bubbles or folds.



Lay the entire surface gradually until the surface is completely covered with the AlphaBlock 4+ film. The resulting barrier layer also keeps steam and moisture out of the living spaces at the same time.

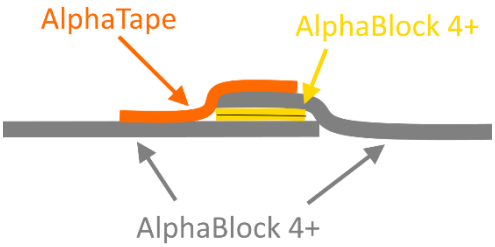


The cables and pipe entries must also be cut free as accurately as possible here.

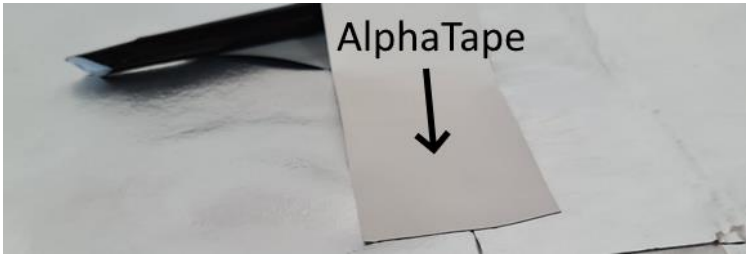


5.3 AlphaTape

Our recommendation: For additional security, apply a strip of our tested AlphaTape over the seam.



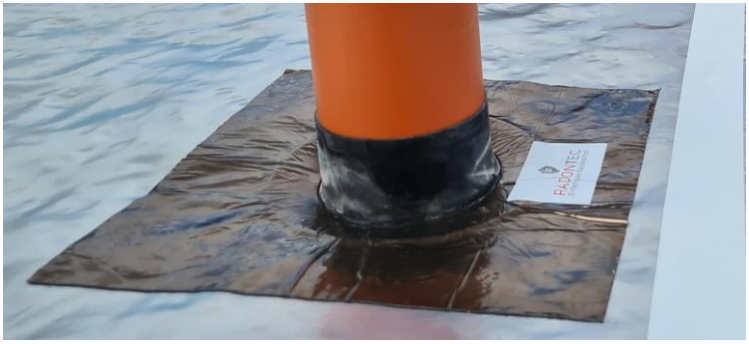
The AlphaTape should be applied centrally over the joint between film 1 and film 2.





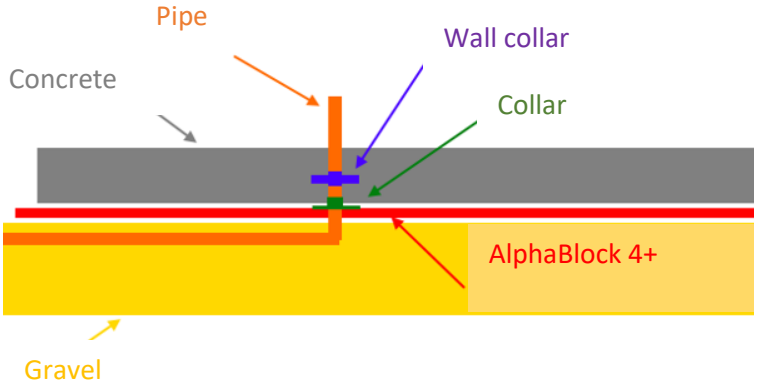
5.4 AlphaColl and wall collar

Components, grounding lugs or connections that penetrate the radon foil must be sealed separately by wall collars and our AlphaColl sleeve. The AlphaColl collars must be bonded to the AlphaBlock 4+ in a radon-gas-tight and moisture-proof manner.



The AlphaColl collar ensures that no radon can penetrate into the building between the KG pipe and the radon-proof AlphaBlock 4+. The bonding must be free of dust and contamination.

Store AlphaColl collars in a shaded and cool place for easier application.

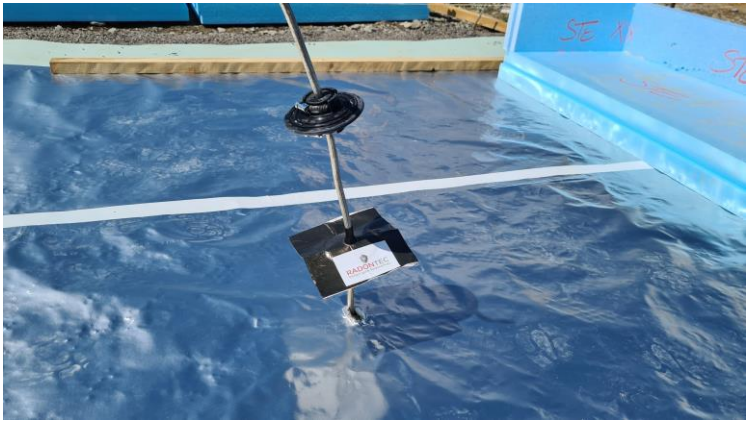


Cable and pipe penetrations pose the greatest risk of convective radon ingress into the building. Therefore, we strongly recommend using our radon-proof wall collar in addition to the AlphaColl collar.

Depending on the orientation of the pipe, the wall collar must be pulled onto the KG pipe before the AlphaColl collar.



The same applies to grounding lugs. First attach the AlphaColl collar and then the wall collar.

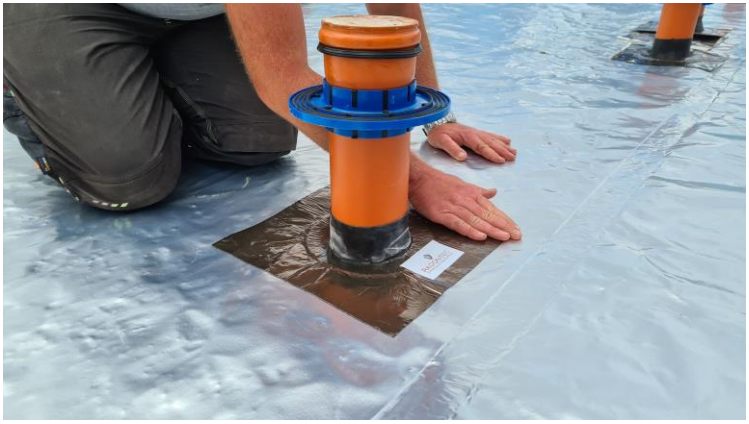


The surface must be dry and free of dust and dirt.

Remove the foil from the cuff.

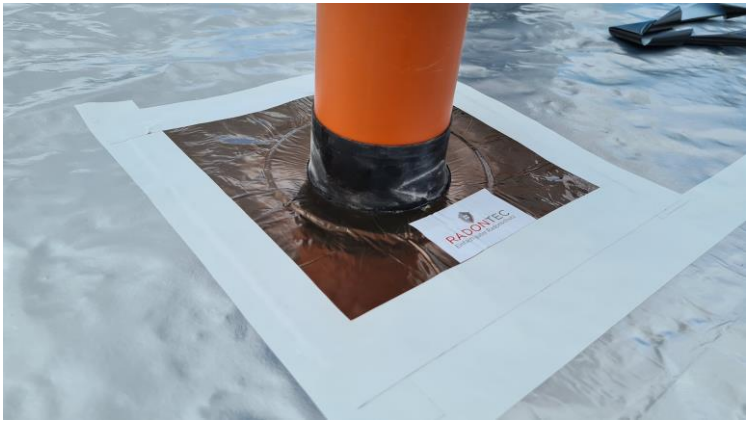


Press on the AlphaColl collar.



Make sure that there are no folds or bubbles in the adhesive surface. This is the only way to ensure the highest possible radon tightness.

Our recommendation: Also secure the edges of the AlphaColl sleeve additionally with our AlphaTape.



Overlapping cuffs should also be secured at the interfaces with AlphaTape.

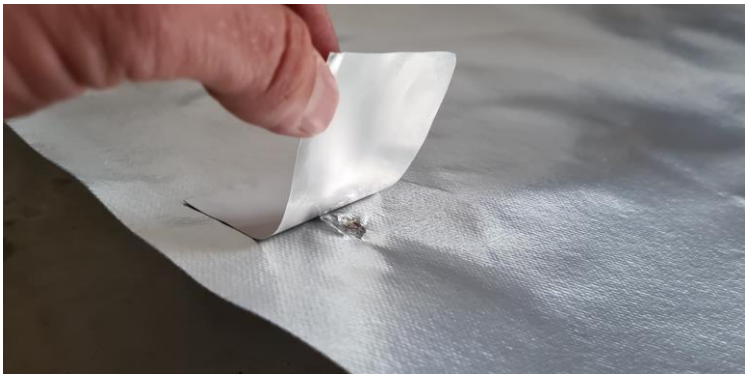


5.5 Repairing the AlphaBlock 4+

A visual inspection of the AlphaBlock 4+ must then be carried out. If mechanical damage (cracks, holes, etc.) can be detected, these must be removed before further layering.



Radon-proof repairs can be made with a piece of AlphaTape.



Cut a suitable piece of the AlphaTape and make sure that the foil is free of dirt or dust.



Press the AlphaTape firmly against the film. It is best to press it on again with a silicone roller.

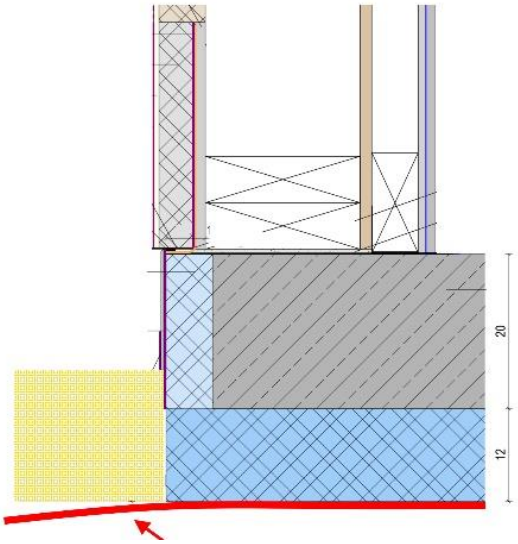
5.6 Protective fleece

If necessary, lay the second layer of protective fleece. The steps are identical to those described in section 5.1.

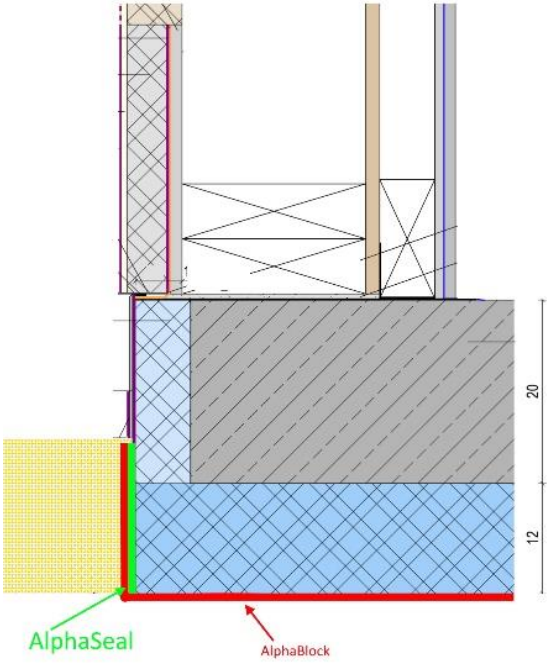
5.7 Overhang of AlphaBlock 4+

The protruding 50cm of the radon foil can be glued to the lateral base plate or laid with a slight slope.

When doing so, make sure that the radon foil slopes at a gradient of approx. 15% so that rainwater is not directed under the floor slab but can flow away from it.



Alternatively: Bond the AlphaBlock 4+ foil with AlphaSeal sealing slurry to the lateral base plate.



To achieve a two-dimensional bond of the film, we recommend a minimum thickness of 3-4 mm of AlphaSeal.

Once the sealing slurry is in place, press the AlphaBlock 4+ film onto the sealing slurry to create a two-dimensional seal.

Make sure that no voids or bubbles are created. The working time of the AlphaSeal is approx. 45 minutes.

After 16 hours, the system is dry.

6 Support and Contact

6.1 Troubleshooting/FAQ

You will find answers to the most frequently asked questions on our website:

https://www.RadonTec.de

6.2 Contact Us

Should you have any further questions or require further help and technical support, please do not hesitate to contact us.

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