



Rely on it.

## RENOLIT ALKORPRO

*The fully-bonded membrane*

[www.renolit.alkorpro.com](http://www.renolit.alkorpro.com)



Cut and cover  
tunnels



# About us

For more than 35 years, **RENOLIT ALKORPLAN** has developed waterproofing solutions for all types of Civil Engineering works, pioneering some applications that are mainstream today, and positioning **RENOLIT ALKORPLAN** Geomembranes as a global reference in terms of quality and reliability.

Thanks to the synergies among the market units of the **RENOLIT** Group, the Sant Celoni factory integrates the most advanced and varied manufacturing technologies. This expertise leads to the ideal solution for each project. The production and managing skills, as well as the technical support, ensure the best satisfaction to customers and partners.



**RENOLIT ALKORPLAN** geomembranes expert teams focus on the customer's needs, offering complete support and technical assistance, from the concept until the realization.

**RENOLIT** Group is also a major player in the sustainable development of synthetic materials. Thanks to the "**RENOLIT** goes Circular" program, **RENOLIT** optimizes the recycling of pre-consumer materials coming from industrial wastes from the production sites within the **RENOLIT** Group.

In 2020 up to 8500 tons of pre-consumer materials have been recycled by **RENOLIT**.

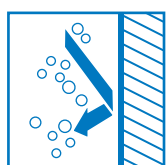
# RENOLIT ALKORPRO

## fully bonded system

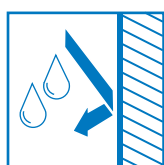
The use of PVC-P geomembranes as waterproofing solution is a sophisticated and safe technology to protect basements and underground structures. This technology has existed for over 40 years and is recognized for its durability.

**RENOLIT ALKORPRO** system is a technology using a new generation of fully bonded membranes that provide an outstanding sealing performance, recommended where concrete structures must be protected against groundwater, contaminants, and ground gases like radon.

**RENOLIT ALKORPRO** is an innovative solution designed to protect buried structure in all eventualities.



Barrier against ground humidity



Barrier against ground water infiltration

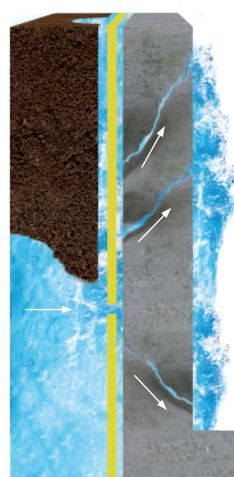


Barrier against Radon gases

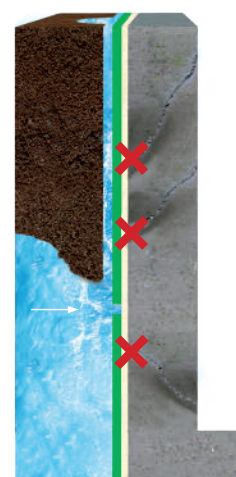
It is suitable for waterproofing of foundations, basements, tunnels, underground parkings and all other concrete constructions below ground level.

When these membranes are used in combination with watertight concrete, a combined sealing system with high performance is formed.

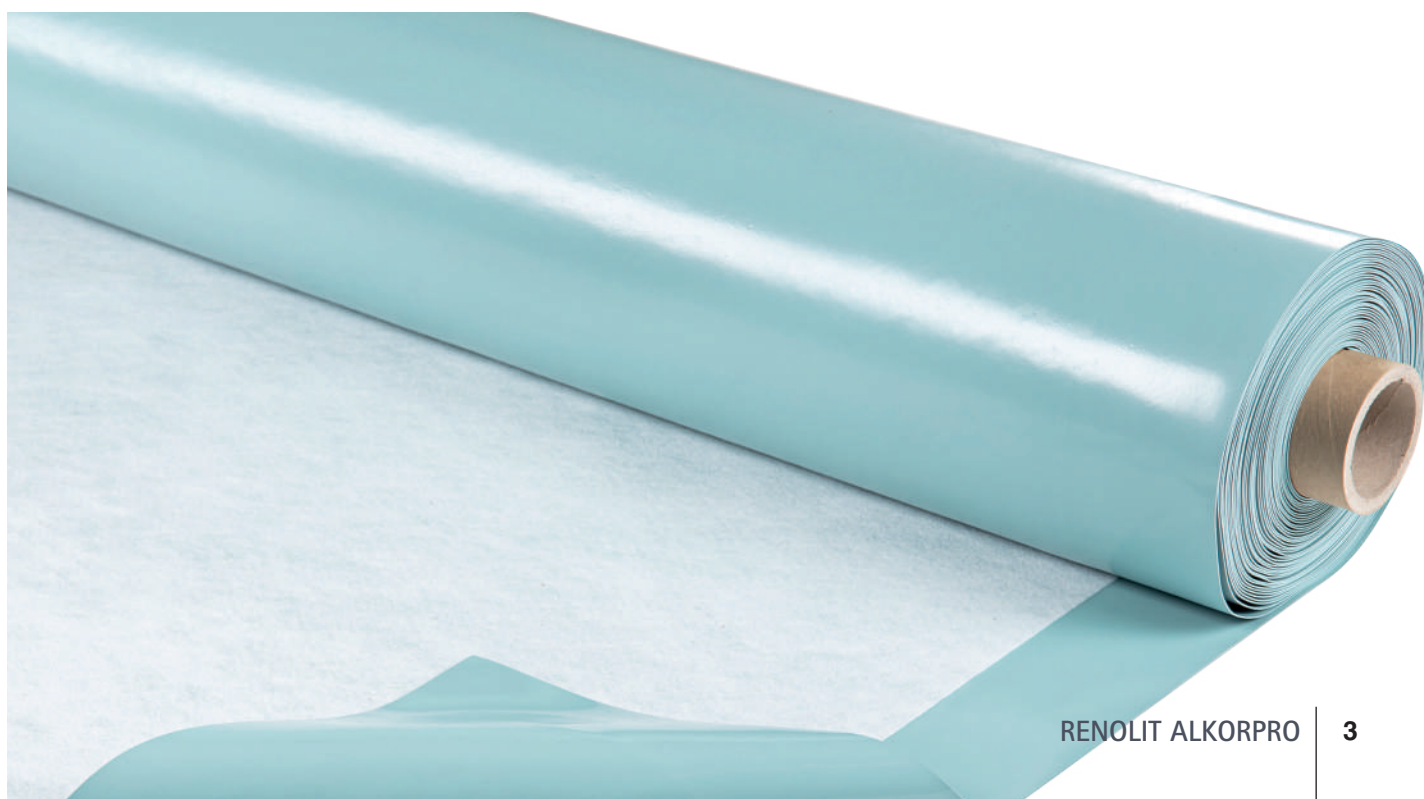
In this way, in the unlikely event of damage to the membrane during installation, the special anti-tracking fleece of **RENOLIT ALKORPRO** will prevent any lateral migration of water between the membrane and the concrete, thus not leading to the loss of the system's sealing function.



Loose laid system



RENOLIT ALKORPRO system







# Self-compartmentation membrane

The membranes **RENOLIT ALKORPRO** are made of a highly flexible PVC-P layer, thermo-laminated to a special non-woven polypropylene fleece.

In the "pre-applied" application, the membrane is installed before concreting, its face provided with the non-woven fleece facing the concrete. During the pouring of concrete, its milt will penetrate deep into the thickness of the fleece and thus fix the membrane at all points to the structural concrete. Concrete is integral with the **RENOLIT ALKORPRO** membrane, which provides waterproofing on the underside and prevents any lateral migration of liquid between the membrane and the concrete (self-compartmentation property).

In the "post-applied" application, the membrane is installed after concreting, with its fleece facing the already poured concrete. The "post applied" fleece contains a Super Absorber Polymer (S.A.P) which makes it hydro-swelling. In the presence of water, the Super Absorber Polymer (S.A.P) included in the fleece swells and creates a very sticky gelatinous paste. In the space between the membrane and the concrete, the swelling pressure exerted by the S.A.P. in the presence of water, will oppose the hydrostatic pressure of the water trying to penetrate through the membrane. The S.A.P. resin thus blocks the penetration of water through an accidental perforation in the membrane (self-healing property) and also prevents any migration of water between the membrane and the concrete (self-compartmentation property).



## Advantages

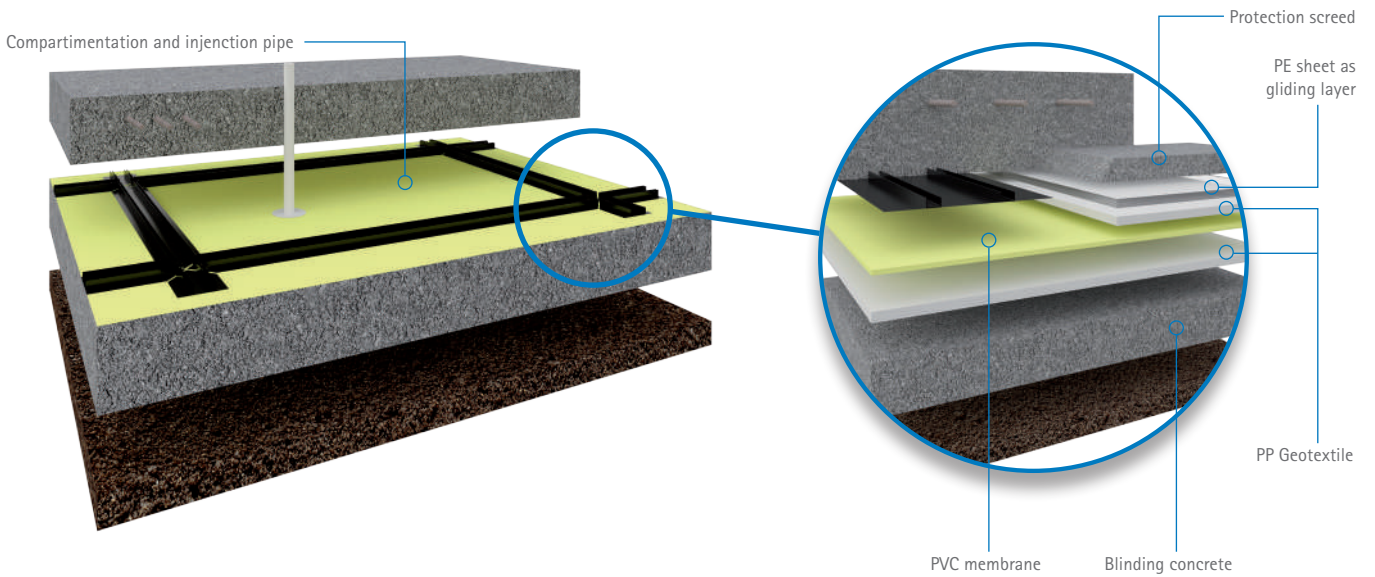
- **Water pressure resistance**  
Tested up to 5 bars.
- **Weather resistance**  
The membrane can be installed in any weather conditions (from -5°C to +60°C). Rainwater proof.
- **Direct application**  
The membrane does not need a protection layer and can be installed directly to the stabilized and compacted soil..
- **Three ways of doing the overlaps**  
Either by the **RENOLIT CEM 805** adhesive, by **RENOLIT ALKORPRO BAND** butyl tape strips or by thermal welding.
- **Redundant sealing system**  
The membrane becomes one with watertight concrete. In case of a puncture in the membrane, the water will not spread below the concrete, thus does not enter the building.
- **High flexibility**  
In case of a crack in the concrete, the membrane will not be affected and will stay watertight, thanks to its flexibility which is more than 200%
- **Self-compartmentation property**  
The water cannot move between the membrane and the watertight concrete or through cracks, because the lateral migration is blocked by the membrane.
- **Easy installation**  
With just a minimal amount of accessories the installation is easy and quick.

# Efficient system

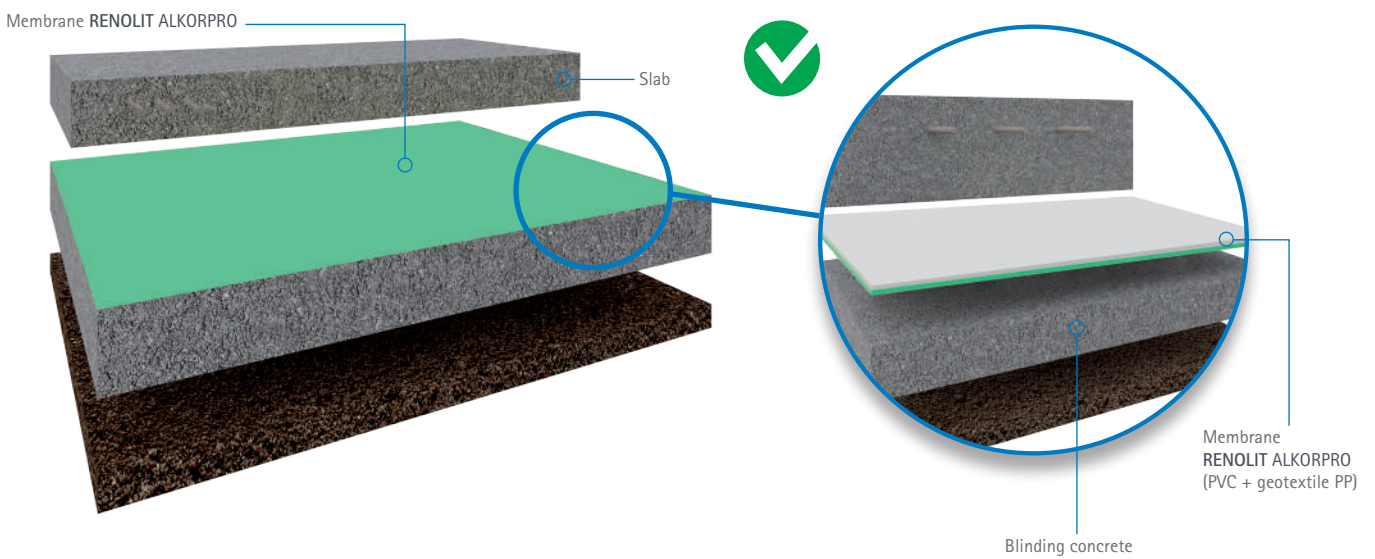
- No need of compartmentation joints.
- No need of injection pipe.

- No need of protection layers on top.

## Loose laid system



## RENOLIT ALKORPRO system



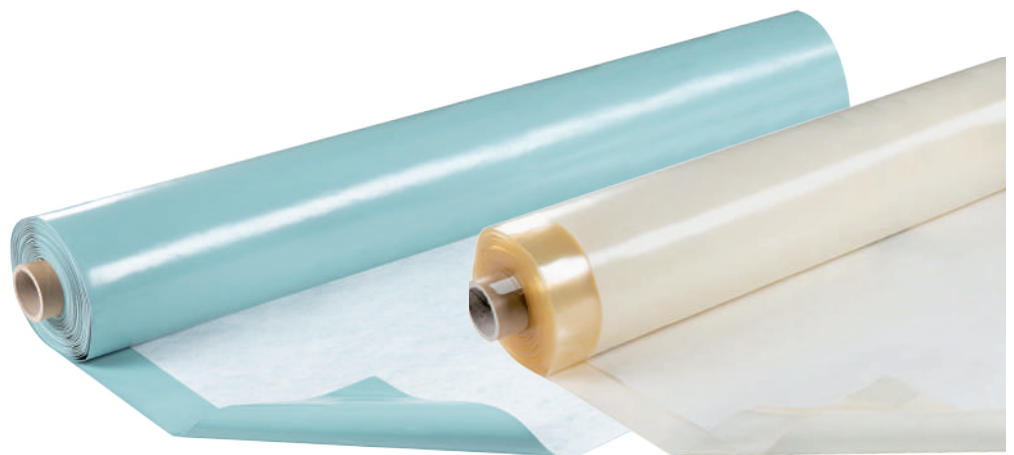
**SELF-COMPARTMENTATION PROPERTY:**  
The RENOLIT ALKORPRO system will block any migration between the membrane and the concrete.





# Geomembrane versions

The **RENOLIT ALKORPRO** system offers four different membrane versions, all available in thicknesses between 1.2 mm and 2 mm.



## COLOURED MEMBRANE -C

The mint green geomembrane is environmentally friendly and allows the incorporation of certain amounts of reworked material.

## TRANSLUCENT MEMBRANE -T

The translucency of the membrane improves the quality control of the installation by allowing a visual control of the overlaps.

### Pre-applied

To be installed before the concrete pouring of the ground slabs and walls, so that the fleece fibres get embedded in the fresh concrete.

RENOLIT ALKORPRO C

RENOLIT ALKORPRO T

### Post-applied \*

Can be also installed on the walls or ceiling after the concrete pouring thanks to the SAP included in the fleece.

RENOLIT ALKORPRO CS

RENOLIT ALKORPRO TS

\* Post applied membranes can also be used as pre-applied for their self healing properties.



## Easy to seal

The **RENOLIT ALKORPRO** membrane can be sealed very easily by mastic glue, by thermal welding or by using a **RENOLIT ALKORPRO BAND** (butyl tape).



Sealing by mastic glue  
**RENOLIT CEM 805**



Thermal welding



Sealing by butyl tape  
**RENOLIT ALKORPRO BAND**



# Installation principles

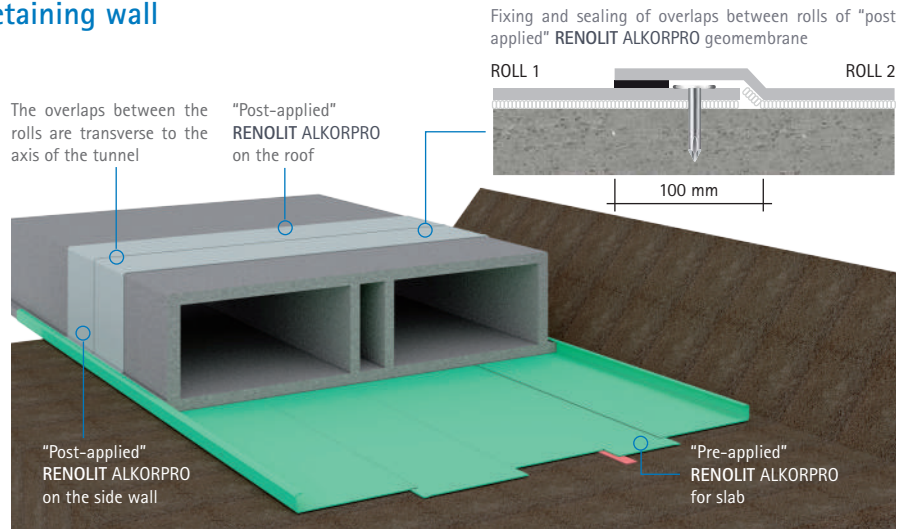
Combinations between **RENOLIT ALKORPRO** "pre-applied" and "post-applied" geomembranes make it possible to waterproof tunnels with a single base material (PVC-P). In cut and cover tunnels with or without a retaining wall, the **RENOLIT ALKORPRO** waterproofing system is a durable, reliable and easy-to-install solution.

## ■ Cut and cover tunnels without retaining wall

On the slab, the "pre-applied" **RENOLIT ALKORPRO** geomembrane is installed on the lean concrete before the concrete is poured.

On the roof and on the vertical walls, the "post-applied" **RENOLIT ALKORPRO** geomembrane is installed on the concrete structure after its completion. Each length of geomembrane will be installed in one piece over the roof and the side walls.

The overlap between the rolls of **RENOLIT ALKORPRO** geomembrane will be sealed by heat welding or by gluing.



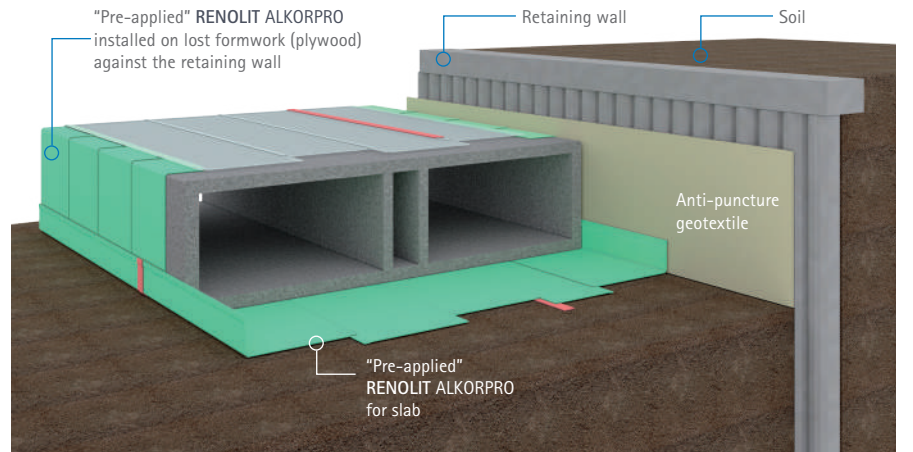
## ■ Cut and cover tunnels with retaining wall

For the side walls, the "pre-applied" **RENOLIT ALKORPRO** geomembrane is installed before pouring the concrete, on a lost formwork or directly on the retaining wall with an anti-puncture geotextile.

The geomembrane is fixed to the support by means of fixing roundels or by means of a temporary fixing at the top (in the case where the retaining wall is separated from the structure of the tunnel.)

On the roof, the "post-applied" **RENOLIT ALKORPRO** geomembrane is placed with its fleece against the concrete.

The overlap between the rolls of geomembrane will be sealed by heat welding or by gluing.

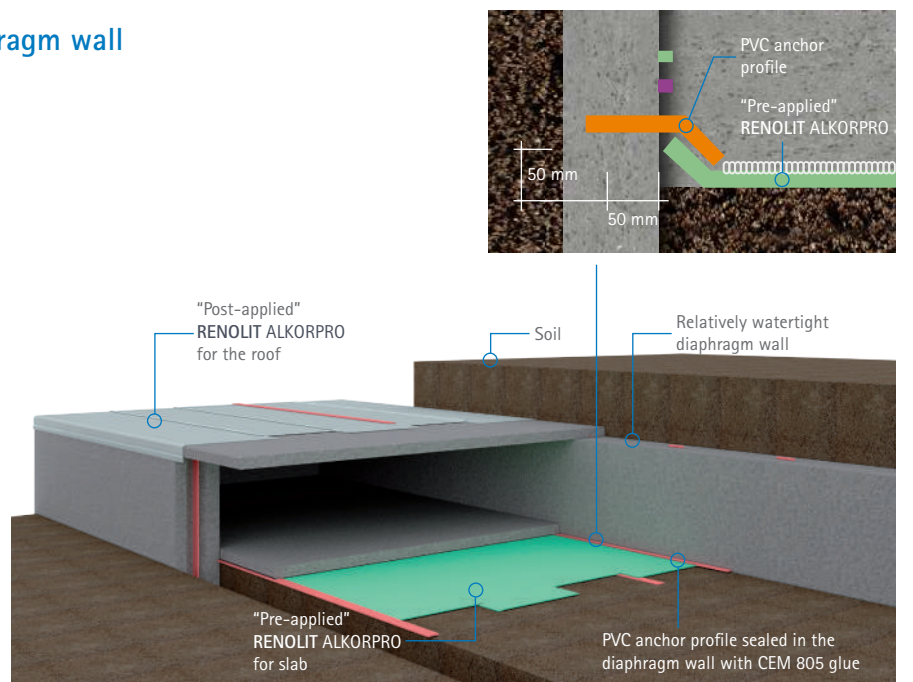


## ■ Cut and cover tunnel with diaphragm wall (relatively watertight structure)

In this type of structure, the diaphragm walls do not have a waterproofing coating. However, they are treated to block water penetration, by injection and caulking of the segment joints.

On the slab, the "pre-applied" **RENOLIT ALKORPRO** geomembrane is installed on the lean concrete before pouring the concrete. A PVC anchor profile is installed in the diaphragm wall, through a notch made with a saw. The end of the profile is sealed in the diaphragm wall using CEM805 glue and the other end is heat welded with the **RENOLIT ALKORPRO** geomembrane.

On the roof, the "post-applied" **RENOLIT ALKORPRO** geomembrane is installed with its fleece against the concrete.

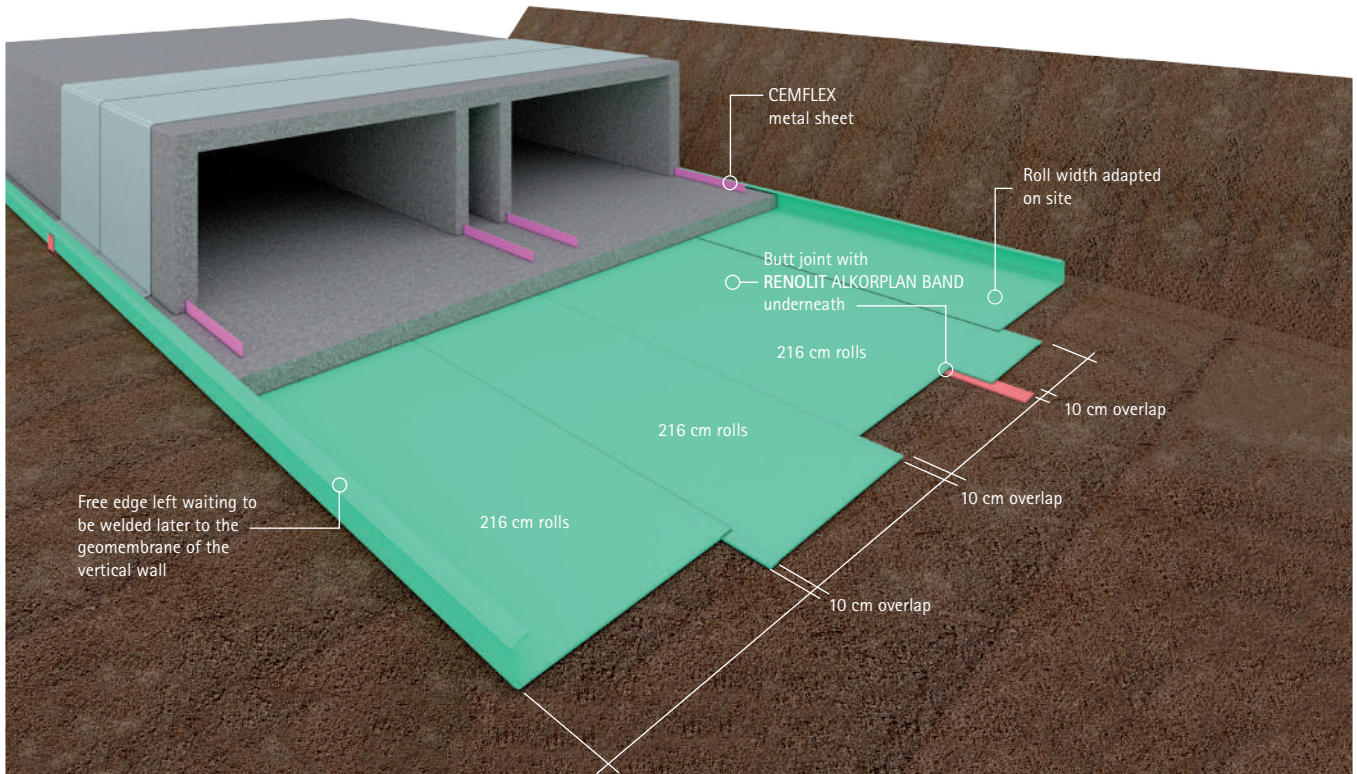




# Installation of the **RENOLIT ALKORPRO** geomembrane

## On the slab

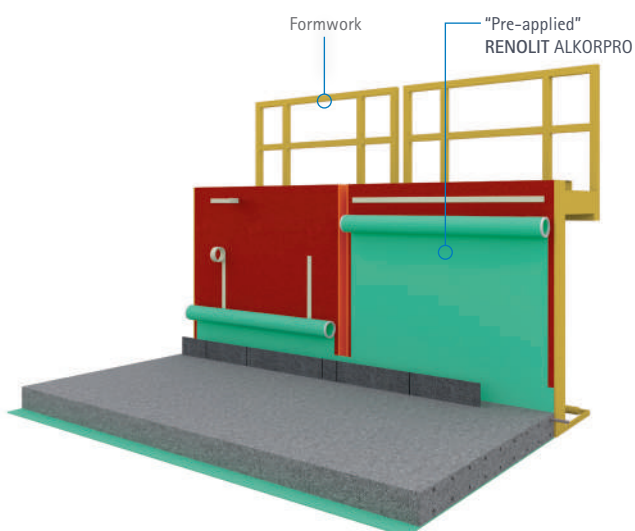
The "pre-applied" **RENOLIT ALKORPRO** geomembrane must be installed on a flat, clean and smooth substrate, free from protrusions and sharp edges. The fleece surface needs to be oriented to the concrete to pour. The rolls must be positioned correctly in accordance with the following detail.



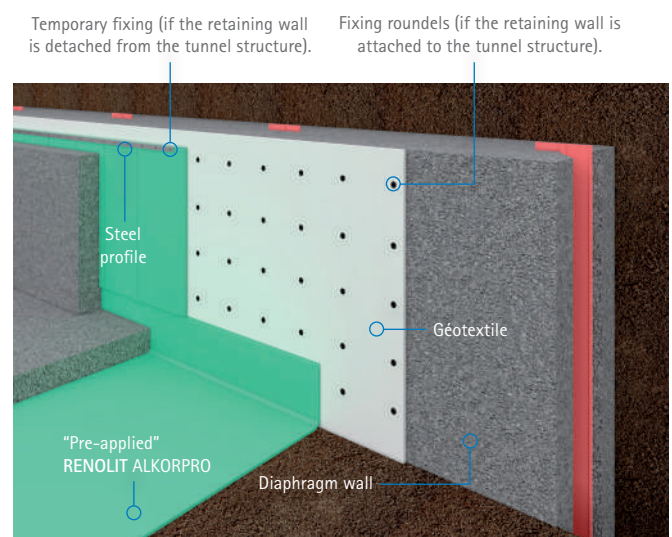
## "Pre-applied" on side wall

On side wall without retaining wall, the "pre-applied" **RENOLIT ALKORPRO** geomembrane is stapled to a reusable wooden formwork, before concreting. On a side wall with retaining wall, the "pre-applied" **RENOLIT ALKORPRO** geomembrane is installed on the retaining wall using temporary fixings or fixing roundels.

Without retaining wall



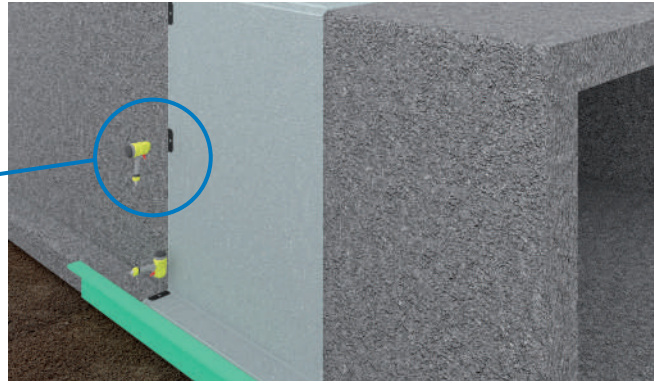
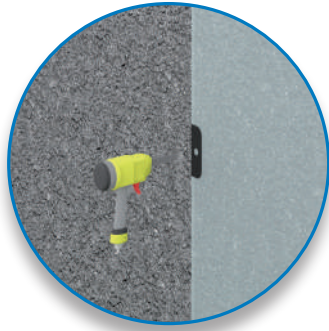
With retaining wall





# Fixing the "post-applied" RENOLIT ALKORPRO geomembrane

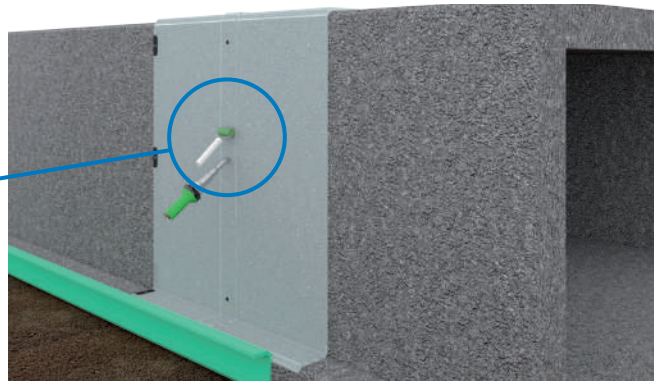
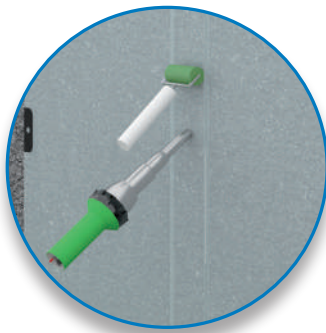
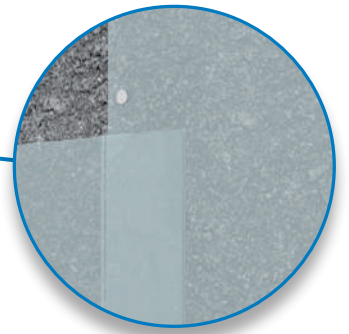
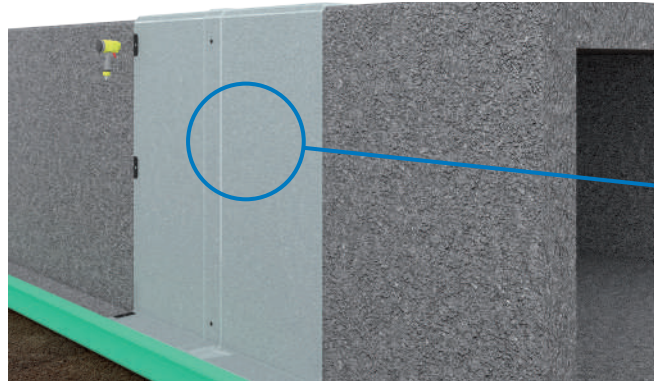
The "post-applied" RENOLIT ALKORPRO geomembrane is fixed to the concrete structure by means of retaining plates nailed through the geomembrane. The fixations must be positioned only on the longitudinal edge of each roll, so that the adjacent roll can overlap the fixations on its free edge. The rolls of RENOLIT ALKORPRO geomembranes must have an overlap of at least 100 mm.



Fix the 1st roll of the "post-applied" RENOLIT ALKORPRO geomembrane to the concrete.

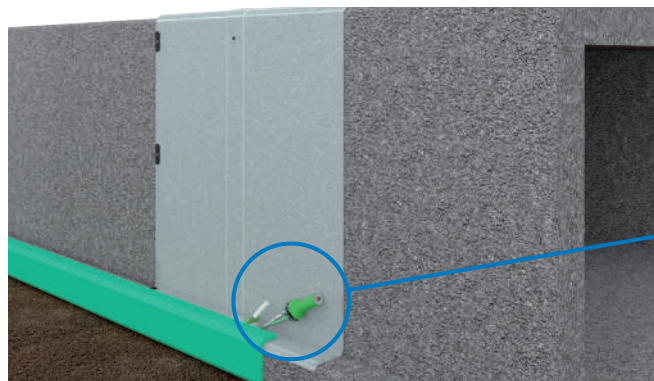
Fix the adjacent roll of "post-applied" RENOLIT ALKORPRO geomembrane to the concrete.

The adjoining geomembrane must be aligned with the first with a 100 mm overlap made by the free edge.



Seal the overlap between the 1st and 2nd roll of "post-applied" RENOLIT ALKORPRO membrane, by heat welding or gluing with CEM805 mastic.

Seal the overlap between the "pre-applied" and post-applied RENOLIT ALKORPRO geomembrane located at the foot of the wall.







# Accessories

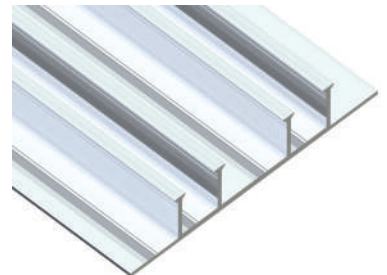
The **RENOLIT ALKORPRO** system is compatible and certified with the following accessories.



Mastic glue **RENOLIT CEM 805**



Cement slurry **RENOLIT CEMdicht 3 in 1**



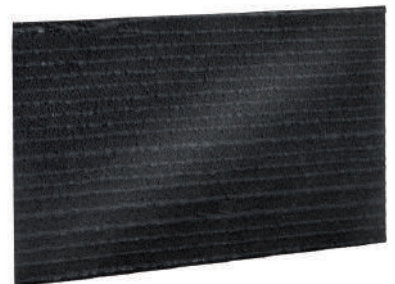
PVC waterstop



Bentonite waterstop joint **RENOLIT QUELLMAX**



**RENOLIT ALKORPRO BAND**



Steel Plate Waterstop **RENOLIT CEMflex**

# Excellent adaptability and easy detailing

During the installation of a tanking system, many details have to be done in a safe and easy way. The **RENOLIT ALKORPRO** accessories allow to seal different elements as shown in the following pictures.

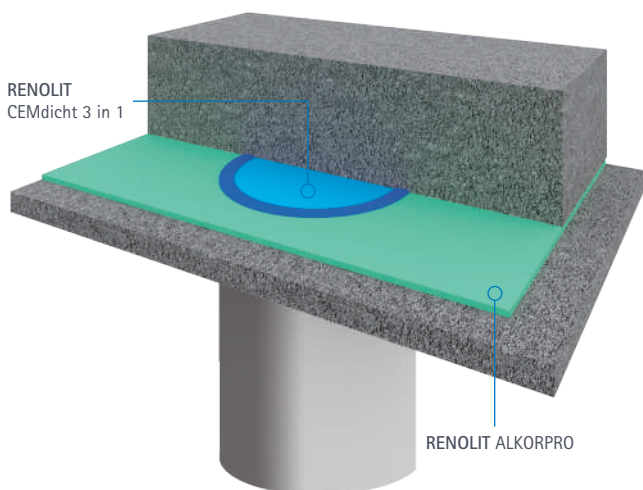


The pipe penetrations are easily sealed using a PVC manchette, the bentonite waterstop joint **RENOLIT QUELLMAX** and the mastic glue **RENOLIT CEM 805**.

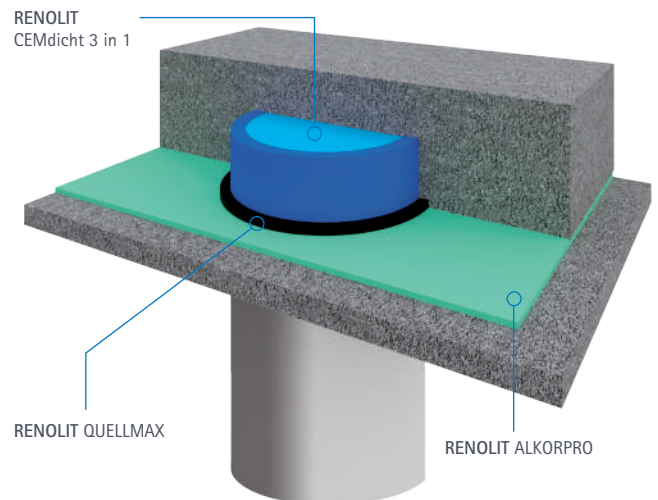


The corners and angle areas are sealed using pieces of membrane **RENOLIT ALKORPRO** shaped and sealed with the **RENOLIT CEM 805** mastic glue.

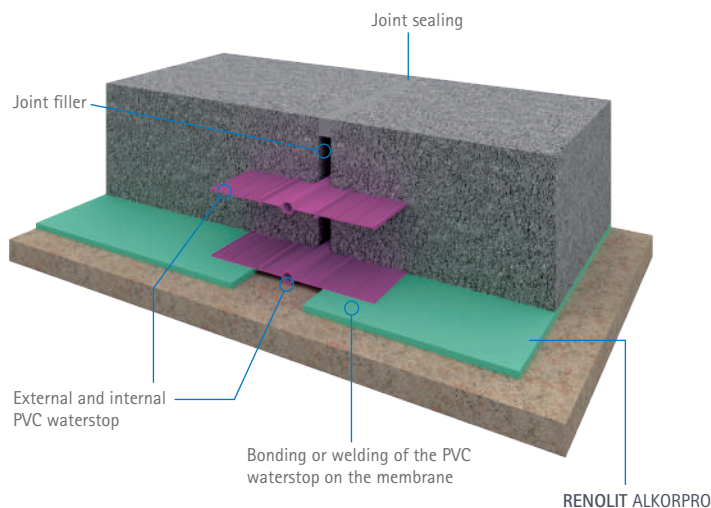
Pile caps



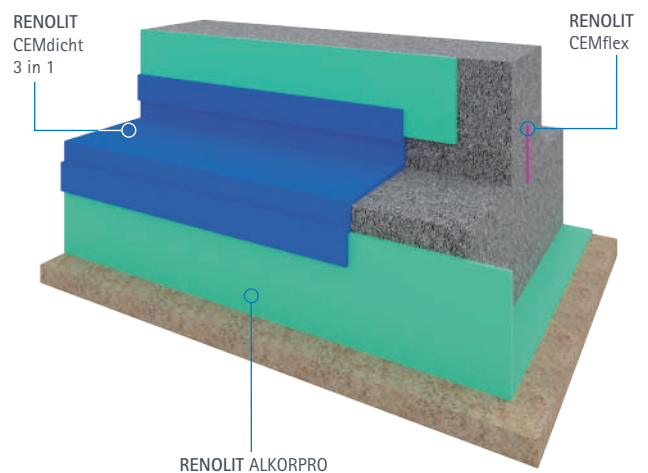
Pile caps



Deflection joint



Footing







# Approvals and Agreements

The **RENOLIT ALKORPRO** system has been thoroughly tested by external laboratories in many European countries and holds the most prestigious and stringent approvals, which prove the high reliability of the system.

- CE Marking; EN 13491.
- German standard DIN 18195 and DIN 18533.
- German standard DIN SPEC 20000-202.
- German standard PG-ÜBB / abP.
- French Avis technique CSTB (process on going).
- British BDA Agreement according to BS 8102: 2009 and NHBC TECHNICAL DATA.







The information contained in the present commercial literature has been given in good faith and with the intention of providing information. It is based on current knowledge at the time of issue, and may be subject to change without notice. Nothing contained herein may induce the application of our products without observing existing patents, certificates, legal regulations, national or local rules, technical approvals or technical specifications or the rules and practices of good workmanship for this profession.

The purchaser should verify whether import, advertising, packaging, labelling, composition, possession, ownership and the use of our products or the commercialisation of them are subject to specific territorial rules. He is also the sole person responsible for informing and advising the final end user. When faced with specific cases or application details not dealt with in the present guidelines, it is important to contact our technical services, who will give advice, based on the information at hand and within the limitations of their field of expertise.

Our technical services cannot be held responsible for the conception of, nor the execution of the works. In the case of negligence of rules, regulations and duties on the part of the purchaser we will disclaim all responsibility. The colours respect the UV resistance required by EOTA, but are still subject to the natural change over time.

Are excluded from the guarantee: aesthetic considerations in case of partial repair of deficient membrane covered by the guarantee. The product availability differs from country to country, please refer to the RENOLIT technical department for further advice.







[www.renolit.com/geomembranes](http://www.renolit.com/geomembranes)  
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