

 **LOOSE LAID & BALLASTED
SYSTEM**




alkor**PLAN**[®]
BY RENOLIT WATERPROOFING

RENOLIT WATERPROOFING
EXCELLENCE IN ROOFING



LOOSE LAID & BALLASTED SYSTEM

PRODUCT INFORMATION

alkorPLAN® L 35177

Calendered/laminated flexible PVC with glass fleece reinforcement conforms to UEAtc guidelines

Application

As waterproofing membrane within loose laid ballasted systems.

Product Data	Method	Requirements according to UEAtc	alkorPLAN® L <small>35177</small>		Units
			1.2 mm	1.5 mm	
Tensile strength	EN 12311-2 (A)	L ≥ 500	644	814	N/50 mm
		T ≥ 500	618	775	N/50 mm
Elongation at break	EN 12311-2 (A)	L ≥ 2	237	246	%
		T ≥ 2	234	236	%
Dimensional stability (6h at 80 °C)	EN 1107-2	L	-0.02	-0.02	%
		T	+0.02	+0.02	%
Cold track temperature (-20 °C)	EN 495-5	no cracks	no cracks	no cracks	-
Tear strength	EN 12310-1	L ≥ 150	361	446	N
		T ≥ 150	356	447	N
Lamination strength	EN 12316-2	≥ 80	160	170	N/50 mm
Vapour diffusion resistance (μ)	EN 1931		15 000 (calc. val.)	15 000 (calc. val.)	-
Resistance to static perforation	EN 12730	-	20	20	kg

Size/Weight	Thickness	Width	Weight	Roll length	Roll weight
alkorPLAN® L <small>35177</small>	1.2 mm	2.05 m	1.57 kg/m ²	20 mts	ca. 64 kg
	1.5 mm*	2.05 m	1.96 kg/m ²	15 mts	ca. 60 kg

* Advised thickness

Standard conditions of sale are included in price lists, all sales of **RENOLIT** products are made under these conditions. alkorPLAN® is delivered in rolls. Every delivery may contain up to 10 % of short rolls (minimum length: 8 m).

Storage

Store dry. Rolls to be parallel and in original packing where possible, do not stack in cross form or under pressure.



Restaurant Deleuil (France)



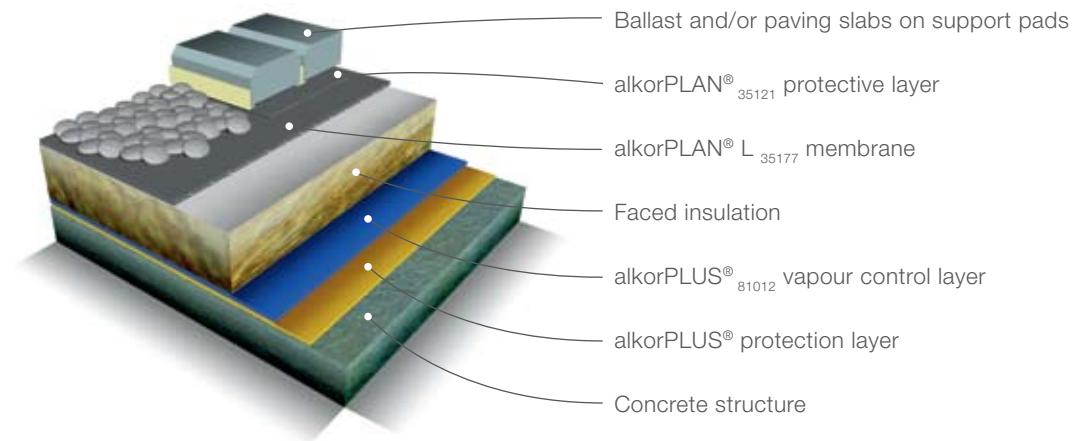
Hotel Kalidria (Italy)

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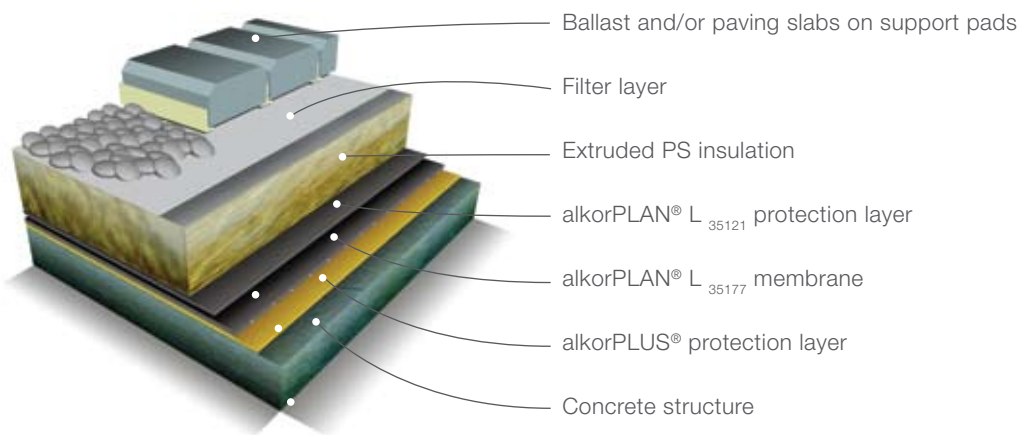
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Application instructions for alkorPLAN® membrane, loose laid with ballast.

Warm roof



Inverted roof



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ROOF CONSTRUCTION

Structure

Before the waterproofing membrane is installed, the roof deck has to be free of irregularities, water, frost, ice and debris such as screws, metal off-cuts, etc.

- Timber structure

The minimum thickness of the supporting structure will be:

- wood: 25 mm (tongued and grooved)
- plywood (exterior quality): 19 mm (preferably 22 mm) this must conform to the relevant requirements of national legislation (or in absence of this of European standard EN 636 and British standard BS 5268).
- OSB 3: 18 mm according to national legislation (or in absence of this of European standard EN 300).

Any treatment should be compatible with the components and the chosen method of attachment of the insulation or single ply membrane. The supporting elements are installed and fixed to obtain a closed deck surface where all vertical movement is excluded. Height or thickness tolerances between panels must not exceed 3 mm. The installation of the supporting timber structure must comply with the local building regulations.

- Concrete roof deck

A concrete supporting structure should comply with the minimum quality according national legislation (or in absence of this according to British Standard BS 8110 part I 1985 and I.S.326:1995). The surface is to be smooth without protrusions or irregularities over 2 mm (ideally power floated).

WARM ROOF

Protection layer

On rough surfaces or wooden structures, an alkorPLUS® protective layer is used to ensure that damage does not occur to the vapour control layer. Protective layers are loosely laid with a 50 mm overlap. Refer to table 1.

Vapour control layer

Condensation can occur on the underside of the membrane during cold periods. If high humidity exists in a building, there may be a build up of condensation in the construction which will not be fully removed in the drying periods. Depending on the predicted interior climate in the building and the hygrometric characteristics of the roofing materials, a vapour control layer will be required.

The alkorPLUS®⁸¹⁰¹² LDPE vapour control layer is available in the standard version. The vapour control layer is laid with an overlap of 100 mm and taped with alkorPLUS®⁸¹⁰⁵⁷ adhesive tape. The joint should be fully supported and be hand rolled to secure to the tape. The vapour control layer is taken up and sealed to details in accordance with national legislation (or in absence of this with Part L1 of the UK Building Regulations).

Insulation

Insulation boards must have a national approval and must be CE approved. They also must be approved by the respective manufacturer for use with alkorPLAN® membranes. The insulation is installed in accordance with the manufacturers' guidelines. The insulation must resist to the designed dead and

live loads. The compressive strength must be at least 0.06 N/mm² at 10 % compression (according to European standard EN 826).

Separation layer

If alkorPLAN® membranes are laid over unfaced polystyrene or polyurethane, an alkorPLUS® separation layer (glass fleece 120 g/m² or polyester fleece 180 g/m²) must be employed. (See table 1) On a bituminous surface, an alkorPLUS®⁸¹⁰⁰⁵ polyester fleece 300 g/m² is always required. The separation layers are loose laid with a 50 mm overlap. When using an insulation board with a facing of aluminium foil, the alkorPLUS® separation layer is not required. If in doubt, please refer to the **RENOLIT** technical department for further advice.

Application as:	Separation layer	Protective Layer
alkorPLUS® ⁸¹⁰⁰¹ glass fleece, 120 g/m ²	on unfaced PUR or PS insulation	-
alkorPLUS® ⁸¹⁰⁰⁵ fleece PES, 300 g/m ²	on bitumen, unfaced PUR or PS insulation	on rough surfaces
alkorPLUS® ⁸¹⁰⁰⁸ fleece PES, 180 g/m ²	on unfaced PUR or PS insulation	-

table 1: alkorPLUS® separation and protective layers

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WARM ROOF

alkorPLAN® membrane

The alkorPLAN® membrane is rolled out, free of tension, on top of the protection or separation layer. The adjoining sheet is aligned to the first one with an overlap of 50 mm. A line is printed on one side of the membrane to facilitate this. A test weld must be carried out prior to welding the roofing sheet, to confirm adequate weld strength and performance. The alkorPLAN® membrane is welded by hot air. The welded area must be continuous and extend a minimum of 30 mm from the membrane edge. End laps must be staggered by 250 mm, thus preventing a situation where 4 roll ends coincide. Where 3 membranes overlap, the centre sheet must be chamfered. After completion of the welding, weld security is verified by pulling a metal probe along the joint in a firm but non destructive way. To ensure satisfactory adhesion of the liquid alkorPLUS®^{8103B}

this operation must be carried out as work progresses.

alkorPLAN® protection layer

On top of the alkorPLAN® membrane, the alkorPLAN®³⁵¹²¹ protection layer is installed to protect the waterproofing membrane from mechanical damage either during or after construction work.

Ballast

Immediately after the installation of the alkorPLAN® protection membrane on the surface, a sufficient layer of ballast is put in place to avoid movement of the membranes by wind forces. The quantity of ballast is determined according to national guidelines (or in absence of this calculation according to UK standards BS 6399-2 or to German standard DIN 1055-4), with a minimum of 50 mm aggregate.

INVERTED ROOF

Protection layer

In all cases, a protective layer is used to ensure that no damage occurs to the alkorPLAN® membrane. Therefore, a protective alkorPLUS® polyester fleece (300 g/m²) should be used. (Refer to Table 1) The alkorPLUS® protective layers are loose laid with a 50 mm overlap.

alkorPLAN® membrane

The alkorPLAN® membrane is rolled out, free of tension, on top of the insulation or separation layer. The adjoining sheet is aligned to the first one with an overlap of 50 mm. A line is printed on one side of the membrane to facilitate this. A test weld must be carried out prior to welding the roofing sheet, to confirm adequate weld strength and performance. The alkorPLAN® membrane is welded by hot air. The welded area must be continuous and extend a minimum of 30 mm from the membrane edge. End laps must be staggered by 250 mm, thus preventing a situation where 4 roll ends coincide. Where 3 membranes overlap, the centre sheet must be chamfered. After completion of the welding, weld security is verified by drawing a metal probe along the joint in a firm but non destructive way. To ensure satisfactory adhesion of the liquid alkorPLUS®^{8103B}, this operation must be carried out as work progresses.

Thermal insulation

XPS insulation boards must have a national approval and must be CE approved by the respective manufacturer for use with alkorPLAN® membranes. The insulation is installed in accordance with the manufacturers' guidelines.

Ballast and filter layer

After the installation of the insulation boards, a filter layer alkorPLUS®^{8100B} 180 g/m² polyester fleece is installed, prior to the ballast being installed:

- rounded, washed gravel (min. 16/32 mm Ø)
- paving slabs on support pads.

The required ballast load must be defined in accordance with the technical approval of the insulation boards and national wind load standards (or in absence of this calculation according to the German standard DIN 1055-4), with a minimum of 50 mm aggregate.

Details and connections

Water outlets must be suitable for the applied system and must remain accessible for regular maintenance. Around larger outlets and parapets a 50 cm wide ballast layer is required. The roof perimeter must be wind tight. To protect the alkorPLAN® membrane against mechanical damage during or after construction work, it is advisable to cover the alkorPLAN® membrane at the parapets with either alkorPLUS®^{81170/81171} metal sheet, timber or concrete slabs. See drawings in Design Manual.

alkorPLAN® protection layer.

On top of the alkorPLAN® membrane, the alkorPLAN®³⁵¹²¹ protection layer is installed to protect the waterproofing membrane from mechanical damage either during or after construction work.

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DETAIL WORK

Edge restraint is installed along the perimeter of the roof and around all penetrations. Special attention is paid to the wind-tight installation of parapets. See also Design Manual.

Edge restraint

alkorPLUS[®] 81170 or 81171 metal sheet is preformed to obtain a minimum width of 70 x 70 mm for an L-shaped profile. (See Fig. 3) These profiles are pre-fixed to the supporting deck. The maximum distance between fixings is 250 mm with fixings on one face only of the alkorPLUS[®] metal sheet and in zig-zag formation to resist a continual tensile load of 2.7 kN/m. If alkorPLUS[®] metal profiles are fixed in the vertical leg, fasteners will be at 200 mm distance. Should the roof have valleys which have angles less than 174°, it will be necessary to include alkorPLUS[®] metal sections of 140 mm girth, fixed at 250 mm centres.

Windtight installation to parapets details



Fig. 3: Edge restraint with alkorPLUS[®] 81170 metalsheet

- With an alkorPLUS[®] 81058 compressive foam strip underneath the alkorPLUS[®] metal sheet trim, the parapet top is sealed against wind pressure. The alkorPLAN[®] membrane is protected from an abrasive up-stand surface by an alkorPLUS[®] 81008 protective layer (min. 180 g/m²). Where the parapet height exceeds 500 mm, intermediate support with a continuous alkorPLUS[®] metal sheet (50 mm wide) is required.

- Parapets can also be adhered to obtain a wind-tight finish. Here, the alkorPLUS[®] 81040 contact glue is applied to the entire surface of both membrane and up-stand with a minimum consumption of 2 x150 g/m².

The parapet will still be finished with a metalsheet trim, but compressive foam and intermediate fastening can be omitted.

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GENERAL REMARKS

Slope

The minimum finished fall at any point is determined by national legislation and/or will be not less than 15 mm per meter.

Compatibility

Contamination of alkorPLAN® membranes by oil, petrol and other solvents, hot or cold bituminous products, tar, etc. must be avoided as these will attack the PVC polymer, damage the appearance and reduce the life expectancy of the products. For a list of chemical resistance with a number of substances, a summary table is available. (See brochure «Chemical stability»). alkorPLAN® membranes must not be brought into contact with alkorFLEX®, alkorTOP®, alkorTEC® or other membranes. Wood in contact with alkorPLAN® membranes should only be treated with salt-based products to avoid adverse effects. Under no circumstances should solvent-based preservatives be used.

Other remarks

The following rules and regulations must be respected at all times:

- UEAtc
- National design guidelines for single ply roofing or in absence of these according to the German guidelines “DDH ZVDH-Regelwerk des Deutschen Dachdeckerhandwerks”
- All other current norms and directives.
- The product information and instructions for execution of particular details issued by **RENOLIT** concerning alkorPLAN® and alkorPLUS® products.
- The installation and safety instructions issued by manufacturers or suppliers of associated materials and accessories used in the construction of the roof.
- Water outlets and other details are duly fixed to the structure.

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.

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The British Board of Agrément have assessed the life expectancy of alkorPLAN®F used in the United Kingdom to be in excess of 30 years.



alkorPLAN® roofing products and Systems have a standard guarantee of 10 years, and are installed by approved contractors and installers who are trained and assessed by **RENOLIT**.



All **RENOLIT** waterproofing membranes for roofing are part of the RoofCollect® collection and recycling programme.



The **RENOLIT** division responsible for the roofing activity has been approved to EN ISO 9001:2000.



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