



Rely on it.

Mechanically fixed system

RENOLIT ALKORPLAN F

RENOLIT
ALKORPLAN
roofing products

Mechanically fixed system

Application

A mechanically fixed system is perfectly suited for lightweight, steel deck structures for large industrial buildings, warehouses and logistic centres etc. It may also be applied this manner on aluminium, concrete or timber decks.

Roofing membrane

RENOLIT ALKORPLAN F single ply membrane for mechanically fixed systems is a flexible, synthetic roofing membrane on a PVC-P base with a woven polyester reinforcing for strength and durability.

RENOLIT ALKORPLAN F roofing membrane is available in different options, providing environmental and aesthetical benefits. It is supplied together with a full range of system accessories.

System

This membrane is fastened to the substrate along its longitudinal edge by means of washer tubes or pressure plates and fixings. Wind load calculations accurately determine the exact number of fasteners to be used in order to avoid any risk of wind uplift. At the overlap, the membrane is hot air welded, using a manual welding gun or an automatic welding machine. There is no naked flame. Hot air welded joints are at least as strong as the roofing membrane itself. They give the roof a neat and homogenous finish.

■ RENOLIT ALKORPLAN F Bright

High quality cool roof membrane for durable and energy-efficient waterproofing.

- ✓ 1.5 mm thick, completely white roofing membrane with a UV resistant protection layer, guaranteeing the highest solar reflection (SRI 115)

■ RENOLIT ALKORPLAN F Solar

An ultralight carrier system for mounting photovoltaics or securing various decorative fascia materials for the exterior finish of a building.

- ✓ This PVC-P profile with aluminium box section insert, is hot air welded on a 1.5 mm thick roofing membrane. Always either adjacent to or above a fixing line. It is 100% secure and fully watertight. No need for ballast or perforation to the roofing membrane.

■ RENOLIT ALKORPLAN F Smart

An innovative roofing solution with a special cool pigment in the top layer providing cool roof technology.

- ✓ Durable and lightweight, it may only be 1.2 mm thick due to the special coating that protects the membrane from UV rays.

■ RENOLIT ALKORPLAN F Design

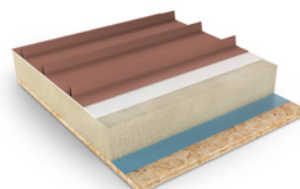
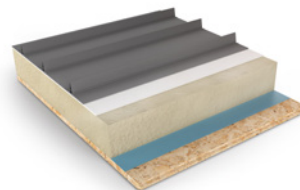
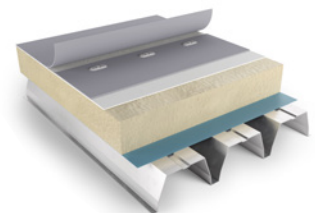
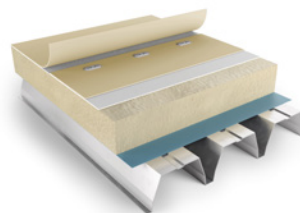
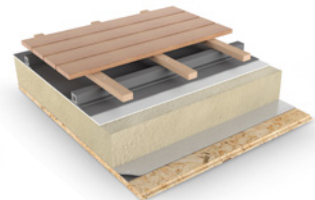
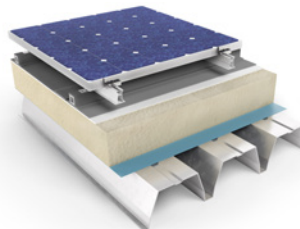
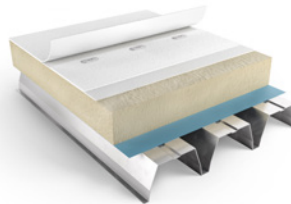
An affordable alternative for aesthetic and visible roofs with a standing seam look.

- ✓ Consisting of extruded PVC-P profiles hot air welded to the surface of a 1.5 mm thick RENOLIT ALKORPLAN F roofing membrane.

■ RENOLIT ALKORPLAN F Metallics

A brilliant solution for trendy copper or shiny silver roofs.

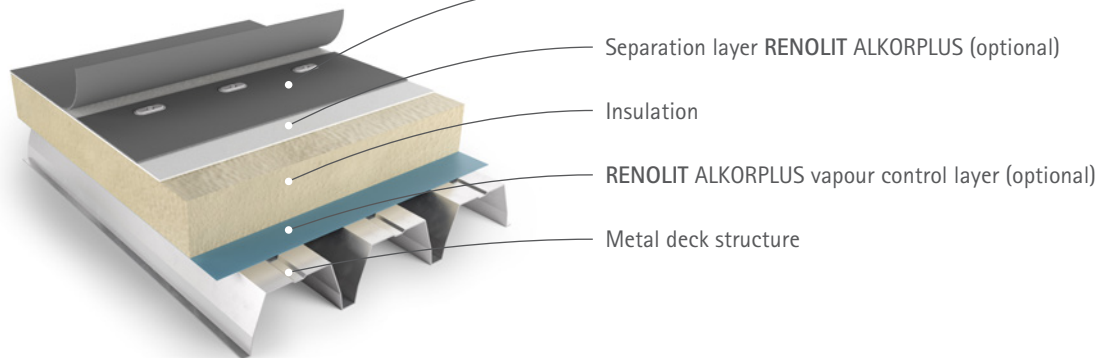
- ✓ 1.5 mm thick roofing membrane in copper or silver colour, with a protective coating and a special embossing. These may be combined with L-size profiles to visualise standing seam.



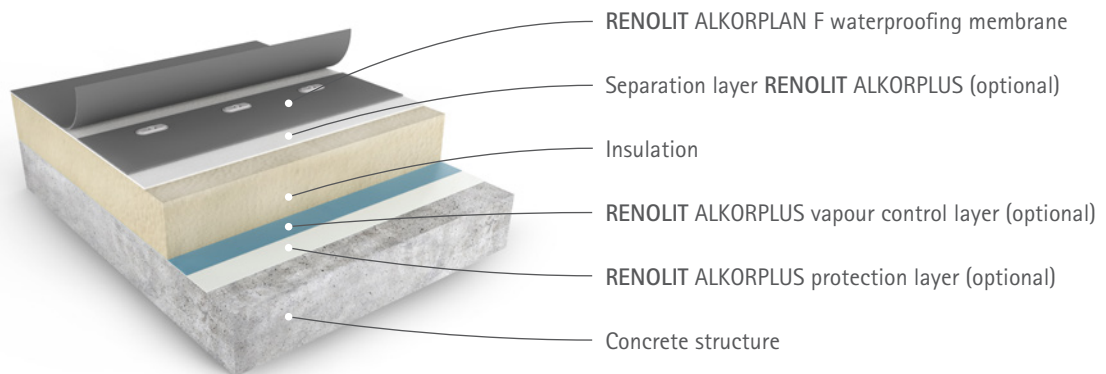
Mechanically fixed system

Application instructions for **RENOLIT ALKORPLAN F** membranes, mechanically fastened into metal deck, wood or concrete. For other substrates, please seek advice and guidance from the technical dept. of **RENOLIT**.

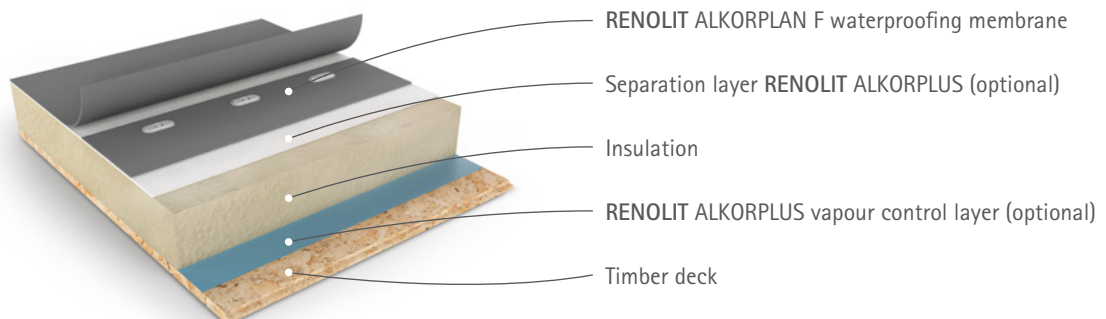
Metal deck (warm roof)



Concrete (warm roof)



Timber (warm roof)



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.

• Metal deck

The minimum thickness for metal deck to be used with mechanical fasteners is 0.7 mm according BS En 10147:2000. All construction work is carried out according to current requirements (BS 5950) and design criteria.

Quality:

- Galvanised Steel: S320 G or 350 G (2/21) according to BS EN 10326
- Alu -zinc according to BS EN 10214 (5%) or EN 10215 (55%)
- Stainless steel 14301 or 14401 according to EN 10088

• Concrete roof deck

A concrete supporting structure should comply with the minimum quality 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).

• Timber structure

The minimum thickness of the supporting structure will be:

- wood: min. 25 mm (tongued and grooved)
- plywood (exterior quality): min. 18 mm (preferably 22 mm) this must conform to the relevant requirements of BS En 636 and BS 1995-1-1.
- OSB 3: 18 mm according to BS 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.

Protection layer

On rough surfaces or wooden structures, a RENOLIT ALKORPLUS protective layer is used to ensure that damage does not occur to the RENOLIT ALKORPLAN membrane or 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. The membrane has a reasonable level of vapour permeability so this condensate will disperse in a period of warmer weather. If higher 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 may be required.

The RENOLIT ALKORPLUS₈₁₀₁₂ 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 RENOLIT ALKORPLUS₈₁₀₅₇ adhesive tape. When the joint is fully supported it must be hand rolled together to secure to the tape. The vapour control layer is laid parallel with the crowns of the metal deck and the overlap seams will occur above the crown of the deck and the joint sealed by use of pressure. If the substrate is anything other than a metal deck (concrete, OSB, plywood or timber), then the direction of installation of the vapour control layer is not critical. The vapour control layer is taken up and sealed to details and all penetrations in accordance with Part L1 of the UK Building regulations.

RENOLIT also has a self-adhesive vapour control layer available. The RENOLIT ALKORPLUS₈₁₀₀₂ vapour control layer is a self-adhesive membrane, which is based on an aluminium film, barrier to vapour, and a self adhesive bitumen-based glue layer.

Insulation

Insulation boards must be approved by the respective manufacturer for use with RENOLIT ALKORPLAN membranes. The insulation is installed in accordance with the manufacturers' guidelines. The compressive strength must be adequate for mechanical fastening with a minimum of 0.06 N/mm² at 10% compression (according to BS En 826). On metal decks, the dimensions and thickness of the insulation boards must suit the dimensions of the metal deck profile.



Saab (UK)

Roof construction

Separation layers

If **RENOLIT ALKORPLAN** membranes are laid over unfaced polystyrene or polyurethane, a **RENOLIT ALKORPLUS** separation layer (glass fleece 120 g/m² or synthetic fleece 180 g/m²) must be employed (see table 1). On a bituminous surface, a **RENOLIT ALKORPLUS**₈₁₀₀₅ synthetic 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 **RENOLIT 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
RENOLIT ALKORPLUS ₈₁₀₀₁ glass fleece, 120 g/m ²	on unfaced PUR, PIR or PS insulation	-
RENOLIT ALKORPLUS ₈₁₀₀₅ synthetic fleece, 300 g/m ²	on bitumen, unfaced PUR/ PIR or PS insulation	on rough surfaces
RENOLIT ALKORPLUS ₈₁₀₀₈ synthetic fleece, 180 g/m ²	on unfaced PUR, PIR or PS insulation	-

Tabel 1: **RENOLIT ALKORPLUS** scheidings- of beschermlagen

RENOLIT ALKORPLAN F membrane

The **RENOLIT ALKORPLAN** membrane is rolled out, free of tension, on top of the insulation or separation layer at 90° to the deck direction. Where the substrate is not metal deck (concrete, OSB, plywood or timber) the direction of the membrane is not critical. Mechanical fasteners (screws and plates) are installed through the membrane and insulation into the crowns of the deck (see fig. 1). The adjoining sheet is aligned to the first one with an overlap of 100 mm minimum. A line is printed on one side of the membrane to facilitate this. The quantity of fasteners is calculated to resist wind uplift in the central and perimeter roof area in accordance with current guidelines (calculation according to UK standards BS 6399-2).

A minimum distance of 150 mm between fasteners is observed at all times. this may require the use of a narrower membrane in order to obtain the correct quantity of fasteners per m² with a minimum of 2/m². A test weld must be carried out prior to welding the roofing sheet, to confirm adequate weld strength and performance. The **RENOLIT 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. Finally, liquid **RENOLIT ALKORPLAN**₈₁₀₃₈ seam sealer is applied to the edges of all welded seams. To ensure satisfactory adhesion of the liquid **RENOLIT ALKORPLAN**₈₁₀₃₈ this operation must be carried out as work progresses.

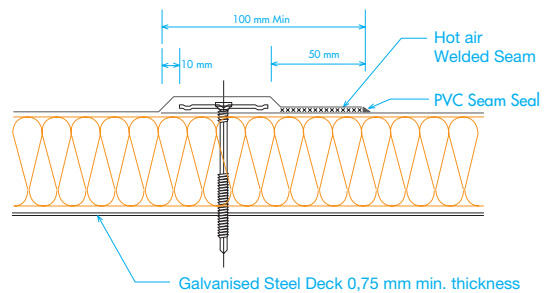


fig. 1: Mechanical fixings and overlaps



fig. 2: Verification of weld security



Logistics building (Sweden)

Mechanical fastening

Fastener type

The type and length of fasteners are determined by the:

- type of structure
- insulation thickness

Taking into account these parameters, a number of fasteners can be used. A summary is given in table 2. Minimum distance between fasteners is 150 mm, maximum distance between fasteners is 475 mm.

Please contact **RENOLIT** in case of the use of 2.10 m wide **RENOLIT ALKORPLAN F**.

Design Value (N/fastener)	
<p>Metal deck In case of RENOLIT ALKORPLAN F take into account a design value of 0.7 kN. This value is based on a winduplift test according to EN 16002 guidelines using the following formula:</p> $W_{adm} = W_{test} \times C_a \times C_d / Y_m$ <p> W_{adm} = design value W_{test} = test value C_a = geometrical correction factor C_d = statistical correction factor Y_m = security factor = 1.5 </p>	
Gas concrete (min. quality CC3/500) Width 1.05 m	Please contact the RENOLIT Technical Dpt.
Concrete (min. quality B25) Width 1.05 m	Please contact the RENOLIT Technical Dpt.
Timber Width 1.05 m	Please contact the RENOLIT Technical Dpt.

Table 2: Design values

- For refurbishment on metal deck thinner than 0.7 mm, a lower pull-out value will be used. The **RENOLIT Technical Department** will be happy to supply more information.
- On concrete or wood, a static pull-out test should be performed to verify the deck quality.
- A minimum of 2 fasteners/m² is required at all times.
- For end laps a minimum of 2 fasteners/lm is required.
- The distance between fasteners must be maintained at regular intervals.
- The fasteners must comply with EN 16002

Please contact **RENOLIT** for other suppliers or other types of screws/plates.

Supplementary fixing

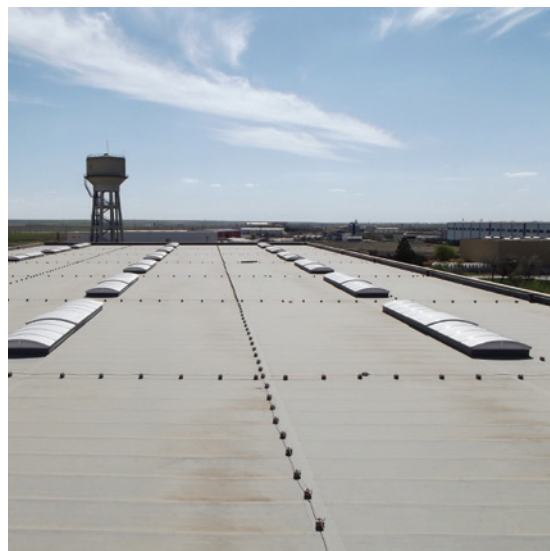
Edge restraint is installed along the perimeter of the roof and around all penetrations. Special attention is paid to the wind-tight installation of parapets.



fig. 3: Edge restraint with **RENOLIT ALKORPLAN** ⁸¹¹⁷⁰ or ⁸¹¹⁷¹ metalsheet

Edge restraint

RENOLIT ALKORPLAN metal sheet ⁸¹¹⁷⁰ or ⁸¹¹⁷¹ 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 **RENOLIT ALKORPLAN** metal sheet and in zig-zag formation to resist a continual tensile load of 2.7 kN/lm. If **RENOLIT ALKORPLAN** metal profiles are fixed in the vertical leg, fasteners will be at 200mm distance. Should the roof have valleys which have angles less than 174°, it will be necessary to include Alkormetal sections of 140 mm girth, fixed at 250 mm centres.



Mercedes factory (Turkey)

Mechanical fastening

Windtight installation to parapet details

• With a **RENOLIT ALKORPLUS₈₁₀₅₈** compressive foam strip underneath the **RENOLIT ALKORPLAN** metal sheet trim, the parapet top is sealed against wind pressure (see fig. 4). The membrane is protected from an abrasive upstand surface by a **RENOLIT ALKORPLUS₈₁₀₀₅** protective layer (min. 300 g/m²). Where the parapet height exceeds 500 mm, intermediate support with a continuous **RENOLIT ALKORPLAN** metal sheet (50 mm wide) is required.

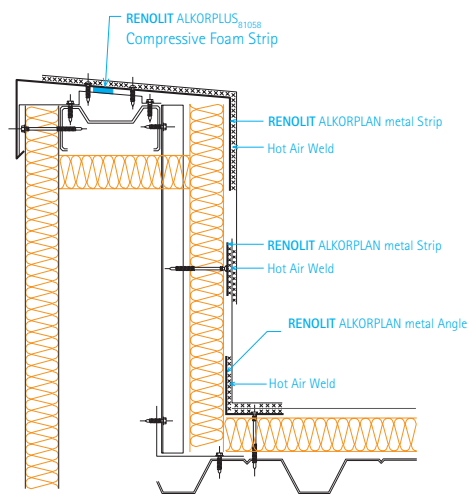


fig. 4: **RENOLIT ALKORPLUS₈₁₀₅₈** compressive foam strip

• Parapets can also be adhered to achieve a wind-tight detail (see fig. 5). Here, the **RENOLIT ALKORPLUS₈₁₀₄₀** contact glue is applied to the entire surface of both membrane and upstand with a minimum consumption of 2 x 150 g/m². The parapet will have an **RENOLIT ALKORPLAN** metal trim, but compressive foam and intermediate fastening can be omitted.

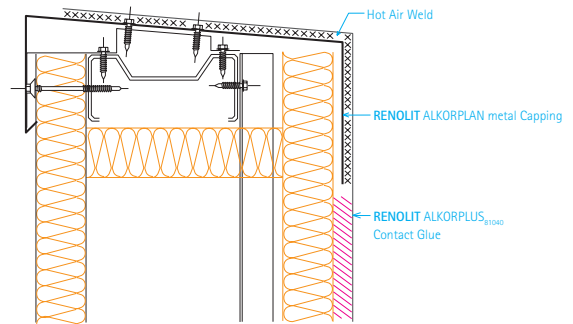


fig. 5: Double-sided gluing of parapets

Execution of details

See Design Manual.

General remarks

Slope

BS 6229 states that a minimum finished fall at any point of 1:80 should be achieved. Cut-to-falls systems are often produced to a 1:60 fall or 1:40 fall.

Compatibility

Contamination of **RENOLIT 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»). **RENOLIT ALKORPLAN** membranes must not be brought into contact with **RENOLIT ALKORTOP** membranes. Wood in contact with **RENOLIT 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:

- BBA, UEAtc, IAB
- The Building Act and its Building regulations.
- All other current norms and directives.
- The product information and instructions for execution of particular details issued by **RENOLIT** concerning **RENOLIT ALKORPLAN** and **RENOLIT 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.
- EN 16002
- For other countries outside the UK the national directives prevail over BS norms.



The British Board of Agrément have assessed the life expectancy of RENOLIT ALKORPLAN F used in the United Kingdom to be in excess of 40 years with extended maintenance.

RENOLIT ALKORPLAN roofing products and system have a standard warranty 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 Iberica S.A. factory in Barcelona is approved to ISO 9001/14001.

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Rely on it.