

Installation Specification

The information in this manual is a guideline to providing sound waterproofing. The base for the guideline is many years of practical and design experience obtained by SealEco. Local legislation or design practice may differ slightly from these specifications and instructions, however the information enclosed should be considered as a general guideline towards the most effective product use and application in a given situation when installing our membranes.

Since the handling and installation is beyond our control, SealEco retain no responsibility for these areas.

We make every effort to ensure that the information provided in this document is current and accurate. However, errors, misprints, inaccuracies, omissions or other errors may sometimes occur despite our best efforts. SealEco does not warrant that the content of this document including, without limitation, product-/installation descriptions or photographs and illustrations, is accurate or complete.

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Product Information

Superseal is an elastomeric EPDM membrane for roof waterproofing that is reinforced with a polyester backing. It can be secured to the roof by mechanical attachment alternatively be adhered with PUR-adhesive or bonding bitumen.

There are three different formulation of the Superseal membrane -T, -ST and -FRT. The decisive factor when choosing product alternative is required external fire classification. Chosen thickness is also directly depending on the demands in the local market. All versions of Superseal is designed and installed with the same procedure.

Description	Thickness (mm)	Size (m)	External fire performance
Superseal T	2.1	1.74x20	FroofT*
Superseal ST	2.1	1.34x20	BroofT1, BroofT2
Superseal ST	2.1	1.74x20	BroofT1, BroofT2
Superseal ST	2.25	1.34x20	BroofT1, BroofT2
Superseal ST	2.25	1.74x20	BroofT1, BroofT2
Superseal FRT	2.1	1.74x20	BroofT2
Superseal FRT	2.25	1.74x20	BroofT2

*Unclassified

Effective thickness: 2.1 mm: 1.1 mm / 2.25 mm: 1.25 mm

Make sure to control that the build up and products chosen is compatible with the local legislations.

Materials Handling and Storing

Check the material as verified by specifications, shipping document and product label. Missing or damaged goods should be reported to SealEco.

Store all materials according to the product specifications.

Packages shall not be opened until the material shall be applied. If the installation work is interrupted, unprotected rolls shall be covered or put back in their packaging.

Make sure that the substrate can carry the load when material is placed on the roof (point load).

Do not allow traffic or work by other contractors until installed roof areas are satisfactory protected. Keep the work site in good order and free from construction debris, loose nails, steels sheet off cuts etc.

Do not cover a larger roof area than it is possible to finalize splicing upon during the working period.

If Superseal is exposed to the sun for a longer period the surface oxidizes. This is not changing the properties of membrane but the quality and strength of the Thermobond splice is strongly affected. Therefore we recommend careful planning so that all splicing is done as soon as possible after Superseal lay out. Another alternative is to cover the seam areas or to fold the membrane to protect seam areas. If the Superseal have oxidized the splice areas must be grinded with a grinding machine and nylon grinding disc followed by cleaning. The time it takes for oxidization to start is depending on the strength of the sun. Therefore it is of particular importance to do seam test before starting regular seaming.

Works planning

The basic behind efficient and safe roof installation is preparation and careful planning of the work.

The roofing work as well as quality assurance becomes easier and more secure if there is a way to split the roof in smaller areas that can be finished in detail during each working period.

If the work is interrupted exposed rolls must be covered or put back in their original packaging.

If Superseal is exposed to the sun for a longer period the surface oxidizes. This is not changing the properties of membrane but the quality and strength of the Thermobond splice is strongly affected. Therefore we recommend careful planning so that all splicing is done as soon as possible after Superseal lay-out. Another alternative is to cover the seam areas or to fold the membrane to protect seam areas. If the Superseal have oxidized the splice areas must be grinded with a grinding machine and nylon grinding disc followed by cleaning before seaming. The time it takes for oxidization to start is depending on the strength of the sun. Therefore it is of particular importance to do seam test before starting regular seaming.

Roof Design

Build Up

Substrate

Superseal can be used on all common substrates like: concrete, timber or corrugated metal deck. Concrete or timber decks can be used for cold roofs without insulation but on metal deck, insulation is required.

The roofing substrate shall have adequate strength and rigidity to carry actual loads from wind and snow etc.

Superseal is not influenced by ponding water but we still recommend a slope of at least 1:100 (0.5°).

The substrate shall be relatively even - equivalent to wood floated concrete. It shall be clean and free from water in any form as well as contaminations like oil or grease. Screws or nails must be properly entered into substrate without risking coming out.

The smoothness of the substrate is important under splice areas. Difference in level more than 5 mm must be levelled before splicing.



Insulation

Superseal can be installed upon any type of insulation without risk of migration. The chosen insulation must be suitable for low slope roofing and adapted to the requirements of the roof design.

Insulation should have compression strength at 10% deformation of minimum 60 kPa (60 kN/m²) to assure a proper installation.

Install insulation suitable for the roof in accordance with the guidelines of the supplier.

Polystyrene insulation can be melted and damaged by the heat from hot air machinery. For this reason we recommend that the insulation is covered by a heat protecting layer like an extra layer of Superseal, a mineral wool board or bitumen felt around details. Automatic welders do normally not melt the insulation.

Make sure to control that chosen insulation is suitable for adhesives when making securement with adhesive or bonding bitumen. It is not possible to adhere to "naked" polystyrene or mineral wool. These insulations requires facing or must be covered with a bitumen felt or equivalent before adhering the Superseal.

Keep Contact Adhesive 5000, Cleaning Wash 9700 and PUR Adhesive 3200 away from insulation that cannot resist solvents.



Vapour Barrier

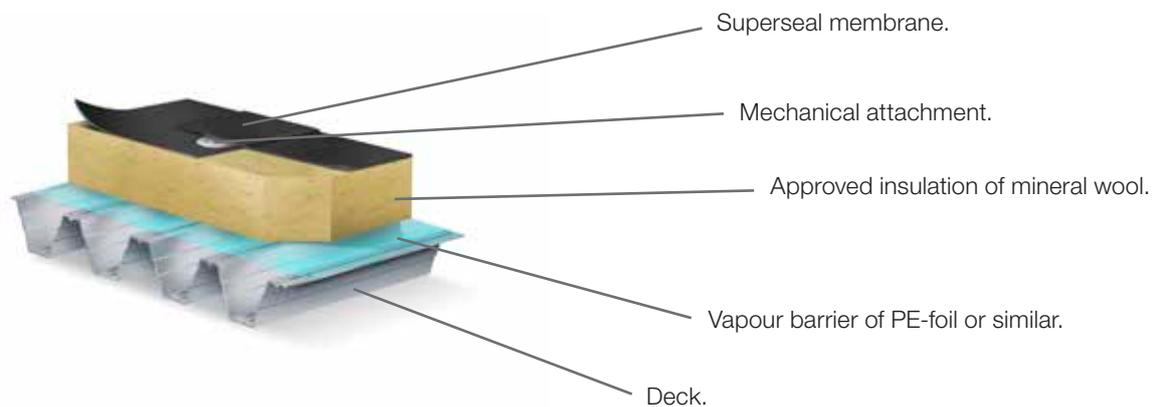
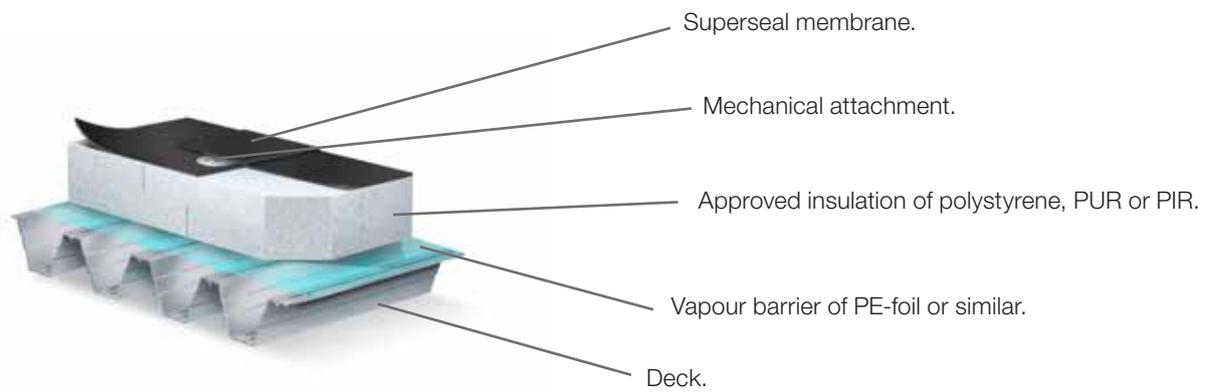
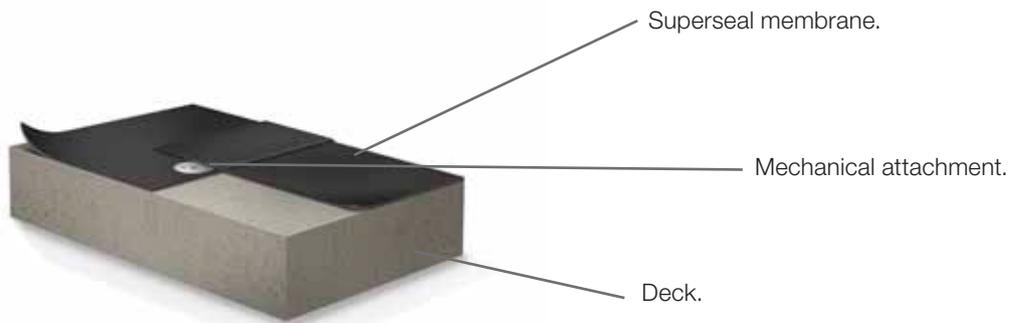
When installing a new warm roof a suitable vapour barrier must be applied under the insulation and it should be installed to be air tight over the entire surface.

At roof terminations, and connections to walls, the vapour barrier shall be brought up over the thermal insulation. At penetrations, the vapour barrier shall be connected air tight with construction tape.



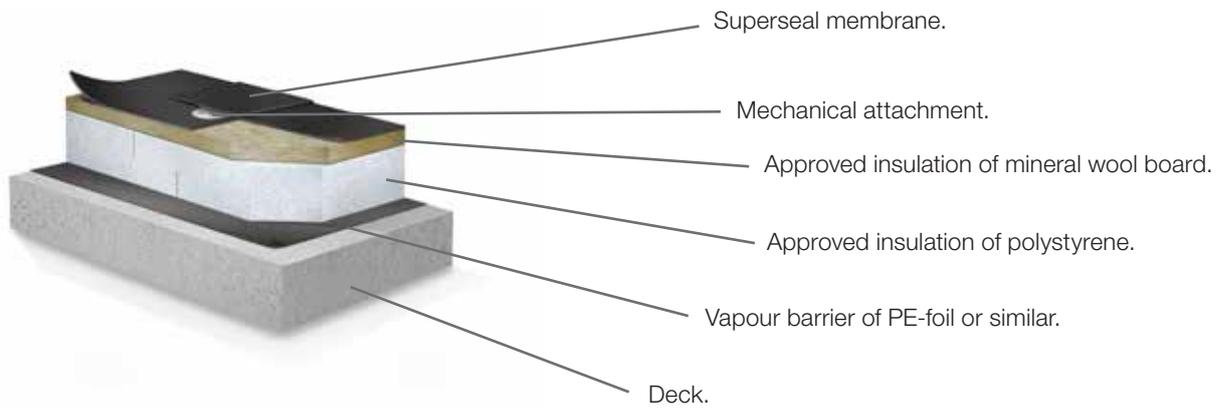
Roof Design

Build Up - Superseal Mechanically Attached



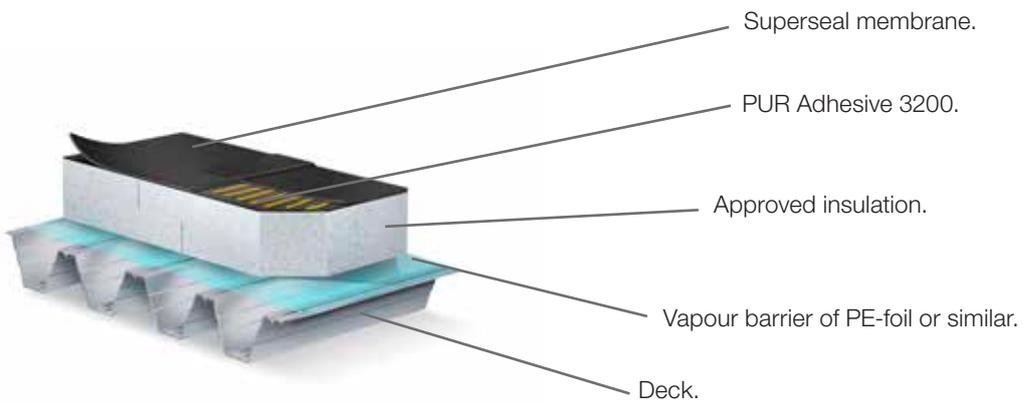
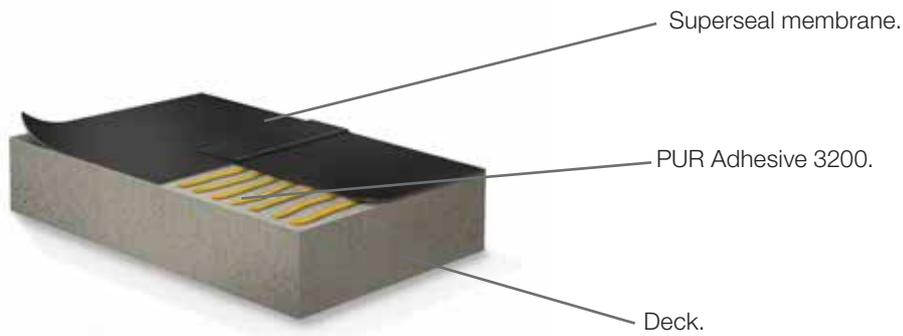
Roof Design

Build Up - Superseal Mechanically Attached



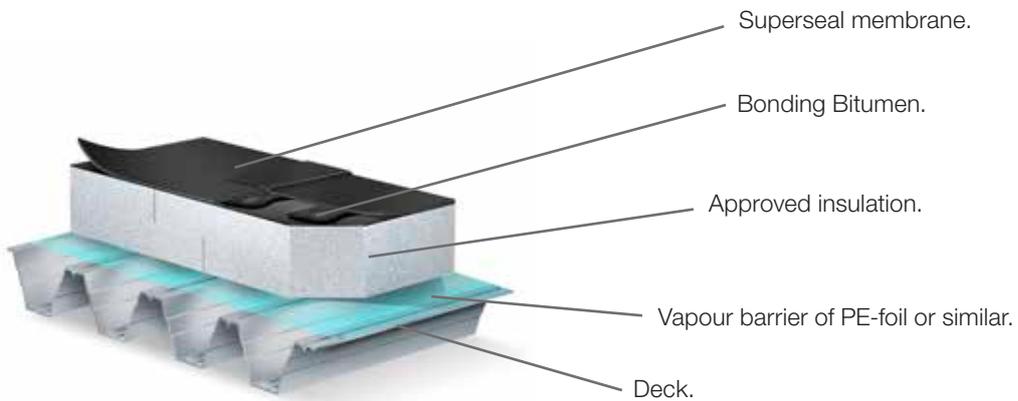
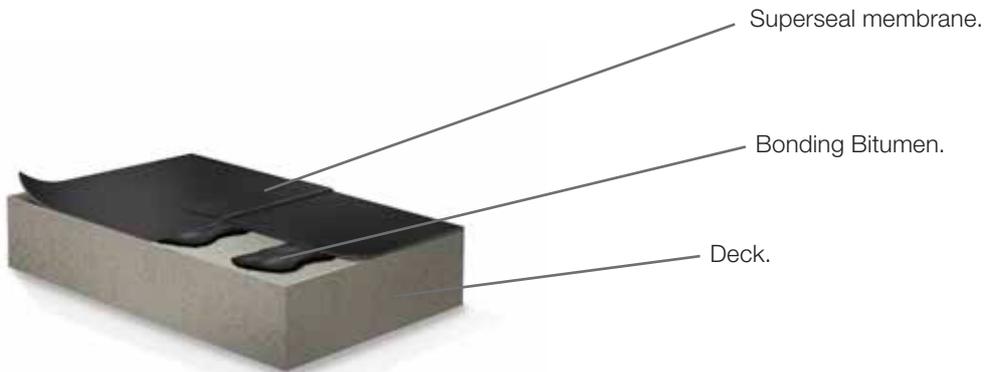
Roof Design

Build Up - Superseal Cold Adhered



Roof Design

Build Up - Superseal Bitumen Bonded

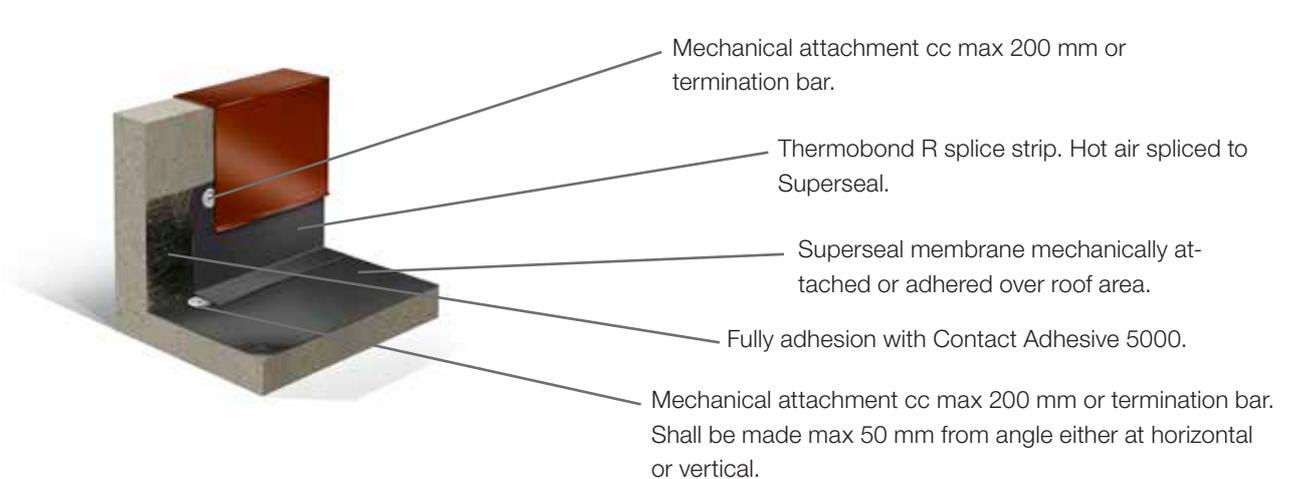


Roof Design

Details - Upstands

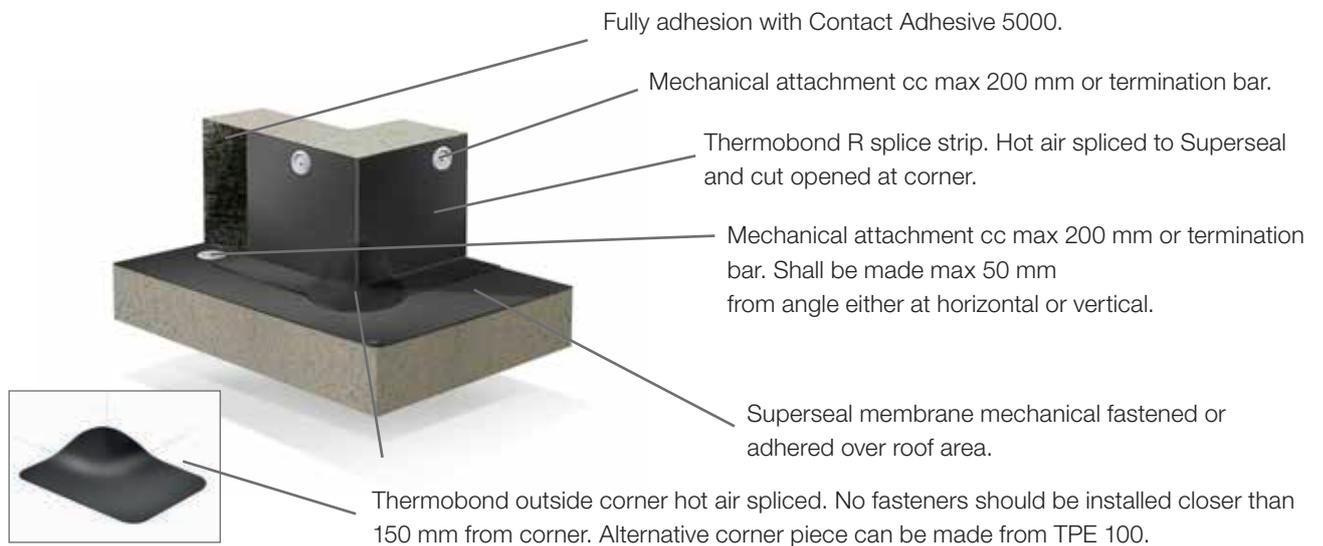
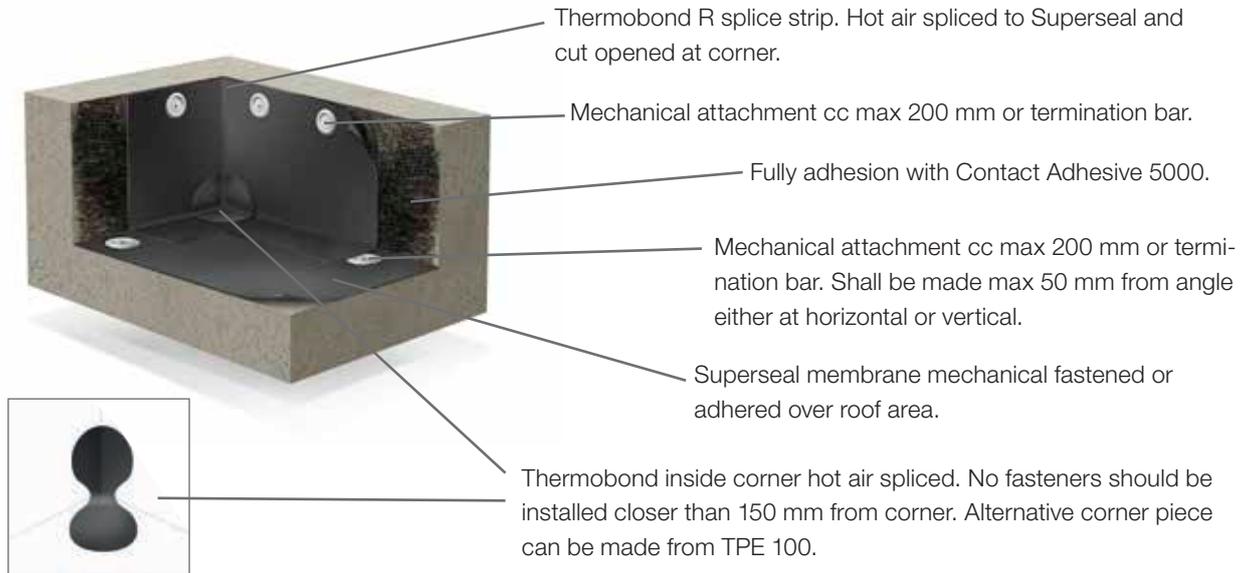
All places where the substrate makes a change in angle greater than 15° should be considered as an upstand and treated accordingly by breaking and mechanical anchoring the Superseal membrane. This is done in addition to the membrane securement in the field area and should be done at perimeters and walls but also for penetrations in the field measuring 500 mm, side or diameter. The distance between the mechanical attachments should not exceed 200 mm cc.

Upstand



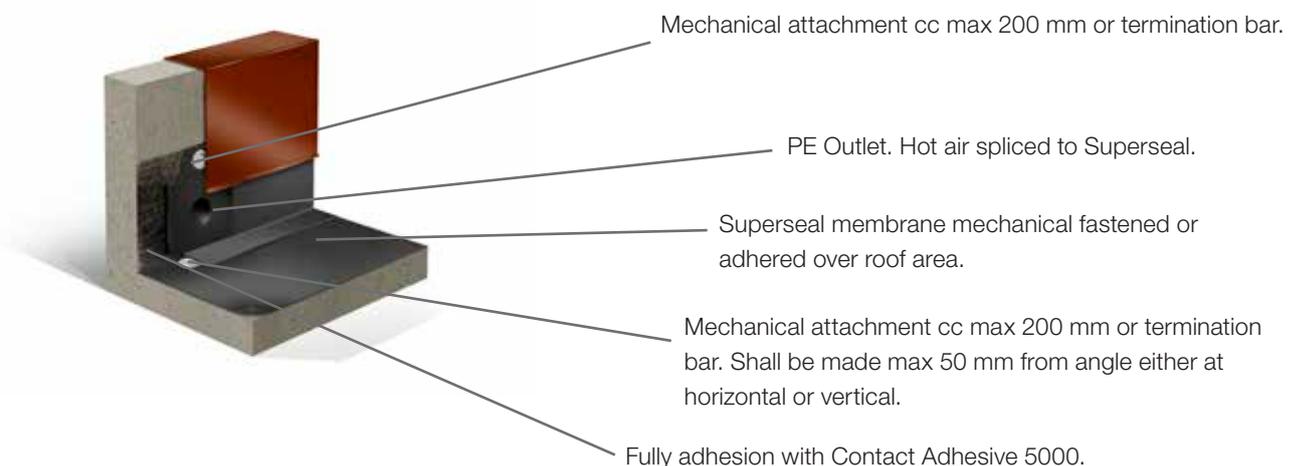
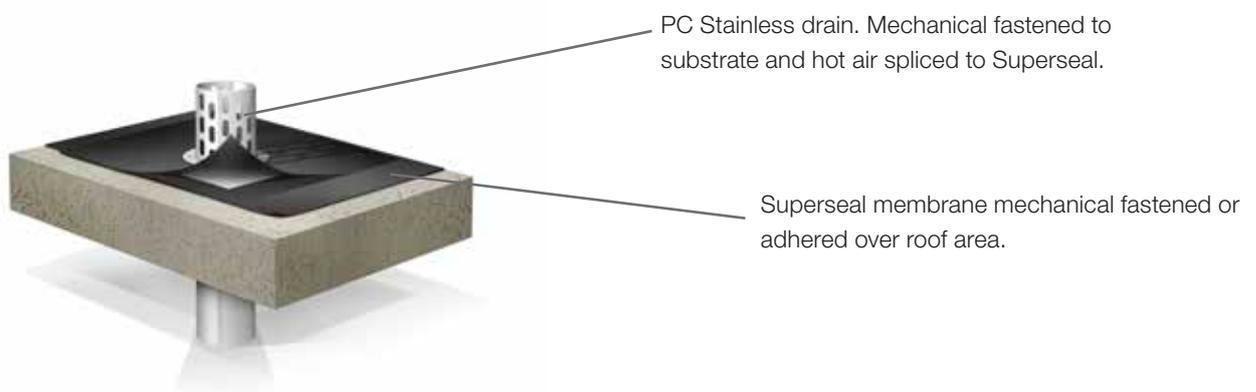
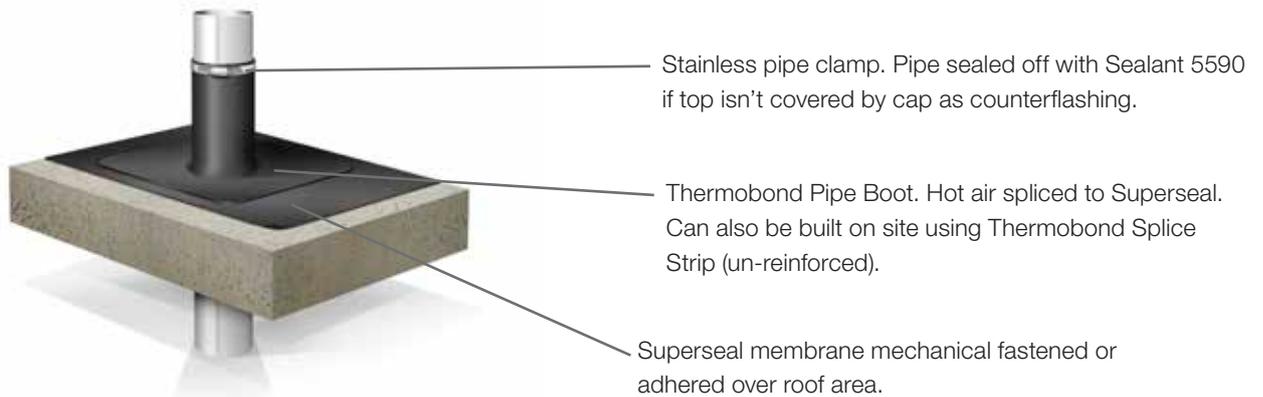
Roof Design

Details - Corners



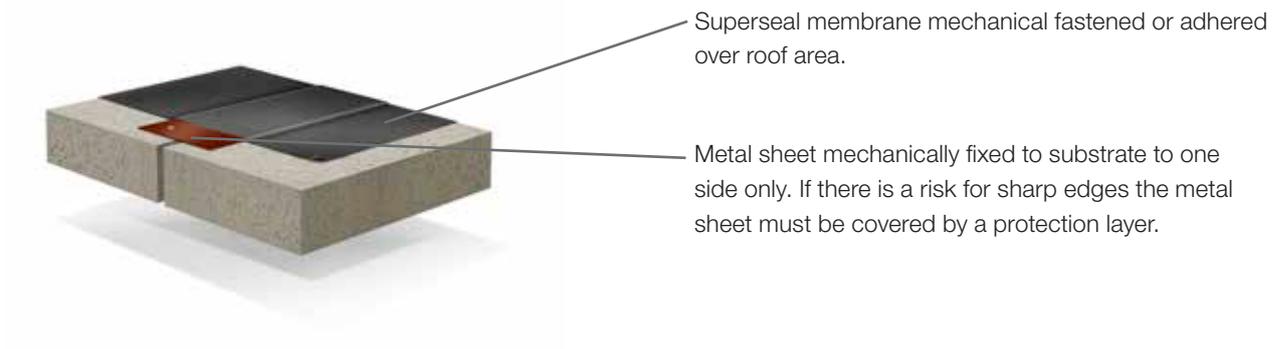
Roof Design

Details - Pipe Penetrations



Roof Design

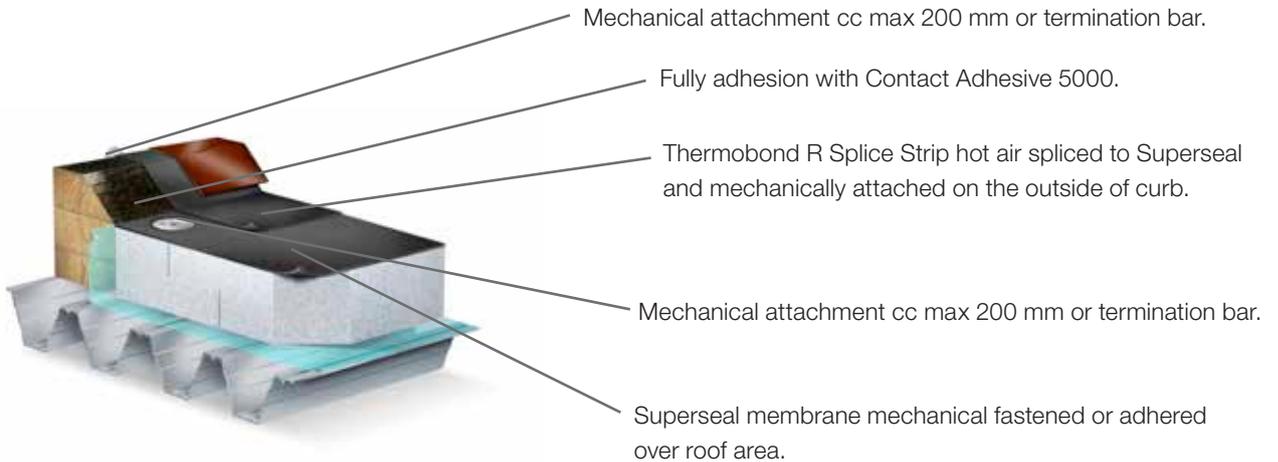
Details - Expansion Joint



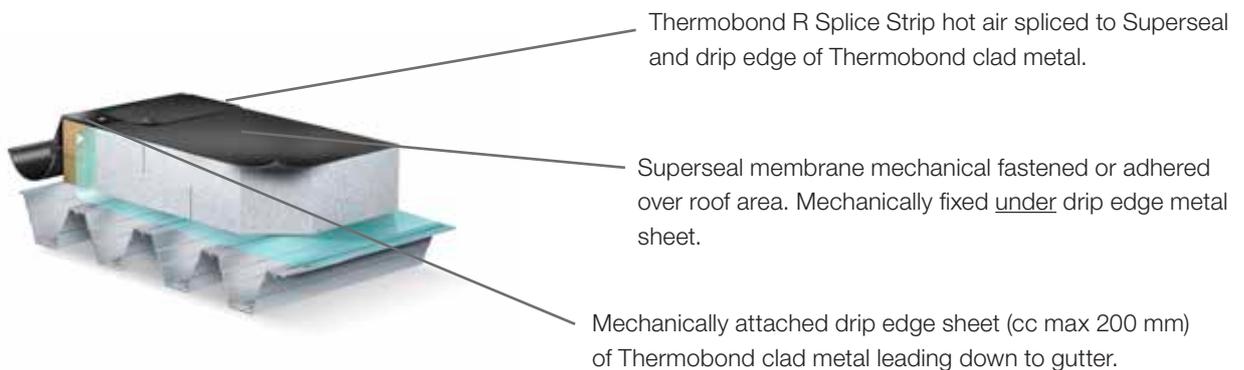
Roof Design

Details - Edge Details

Termination at Curb



Termination at Drip Edge



When prolonging the drip edge sheet of Thermobond clad metal the sections should be placed with a gap of 5 mm where the gap is bridged with duct tape and sealed off by welding a cover strip of Thermobond R splice strip.

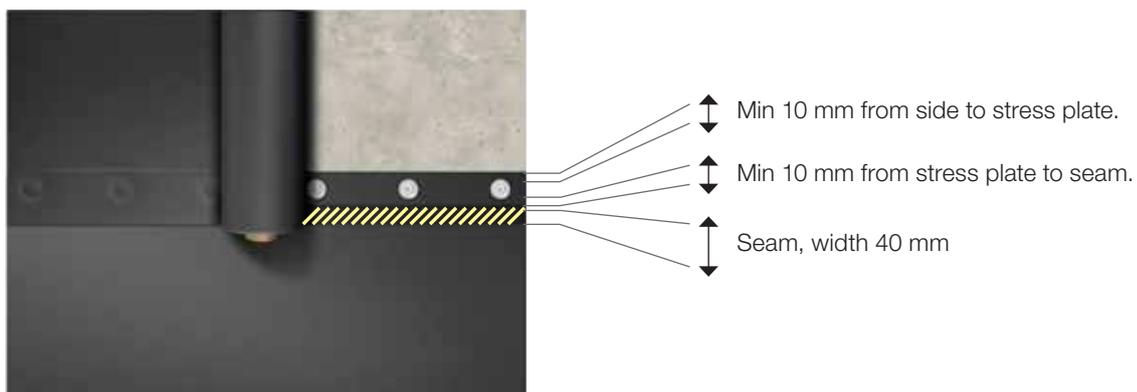
Membrane Installation

Mechanically attached Superseal

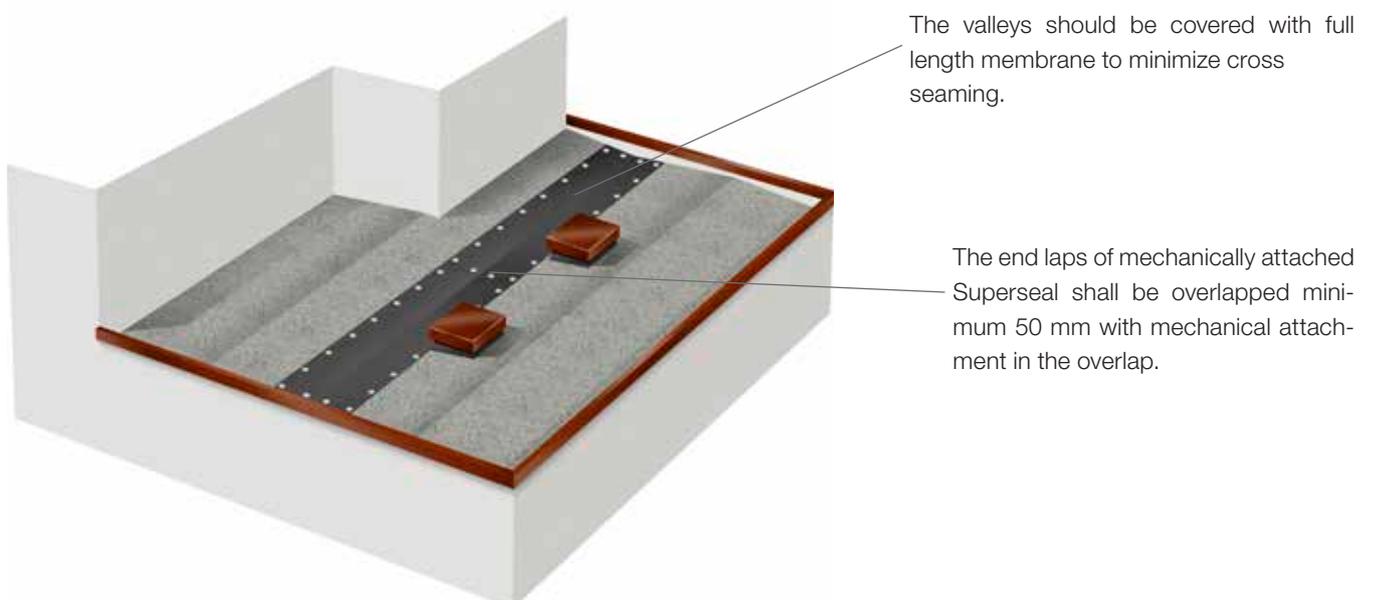
Make sure that proper fixation plan for the Superseal membrane exist and that this is based on an unique wind uplift calculation for the project. If the needed rows for fixation are less distanced than the adhered width, additional row of fixation can be entered in the middle of the membrane and be covered with Thermobond R splice strip.

The installation of Superseal shall preferably start at the lowest parts of the roof either in a valley or the lowest side. From this point the lay-out of the membrane is done cross the slope direction with a membrane overlap of approx 120 mm. Exception to this must be done if it is a corrugated metal deck that runs in the direction of the slope. If so the membrane is installed along the slope to enable attachment.

The Superseal rolls shall be positioned so that they can be rolled out into their final position without adjustments.

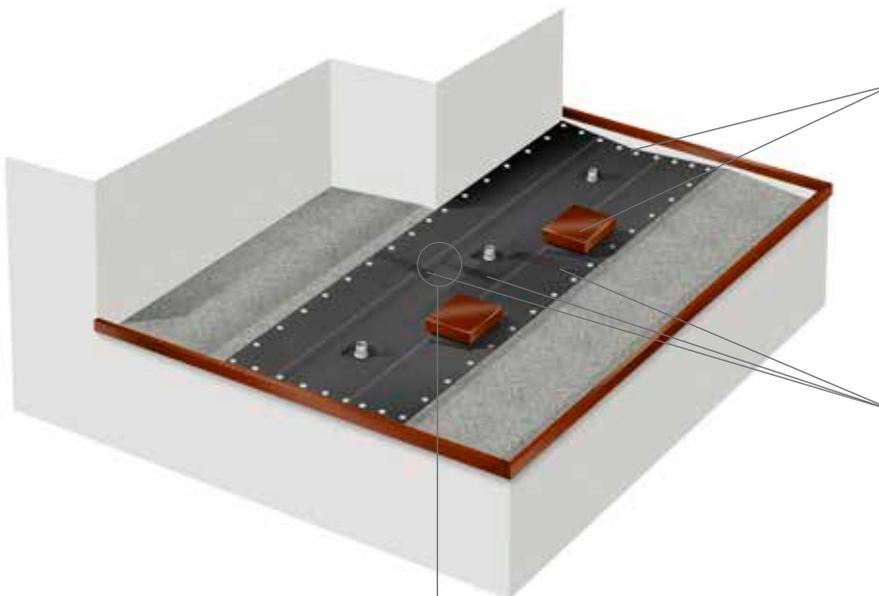


Measurements for positioning the Superseal for mechanical attachment. There are two parallel lines printed on the membrane for guidance.



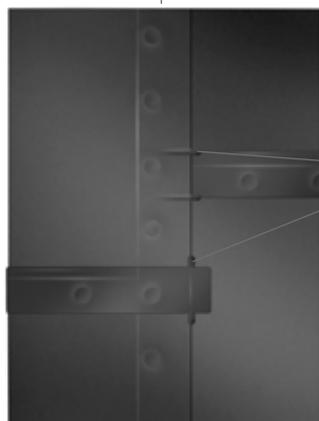
Membrane installation

Mechanically attached Superseal



Mechanically attachment with screws and stress plates should be installed at all perimeters, upstands and around penetrating details in the roof field measuring 500 mm or more (side or diameter). The distance between these stress plates should not exceed 200 mm.

Cross-seaming of mechanical fastened Superseal is done with a cover strip of Thermobond R splice strip in the width 150 mm.



Hot melt sealant shall be applied at T-joints for the cross seaming.

Slope direction →

Make sure that the mechanical attachments are properly entered into the substrate and that the stress plate is close and tight to the Superseal. The stress plate should however not be too tight installed giving wrinkles in the Superseal membrane or entered into soft insulation. When working on soft insulation telescopic tubes shall be used.

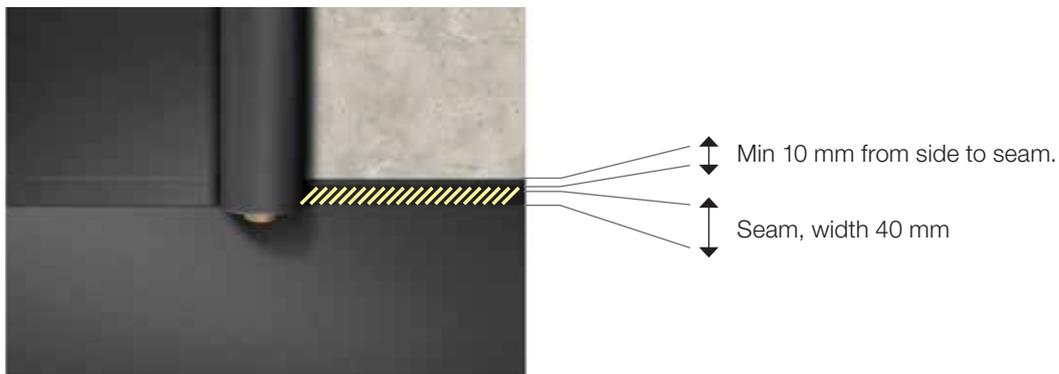
We recommend that all cuts and overlaps for splicing should be properly marked with a caulk line before execution. Straight line for cuts and splice is crucial for easy installation and good appearance.

Membrane Installation

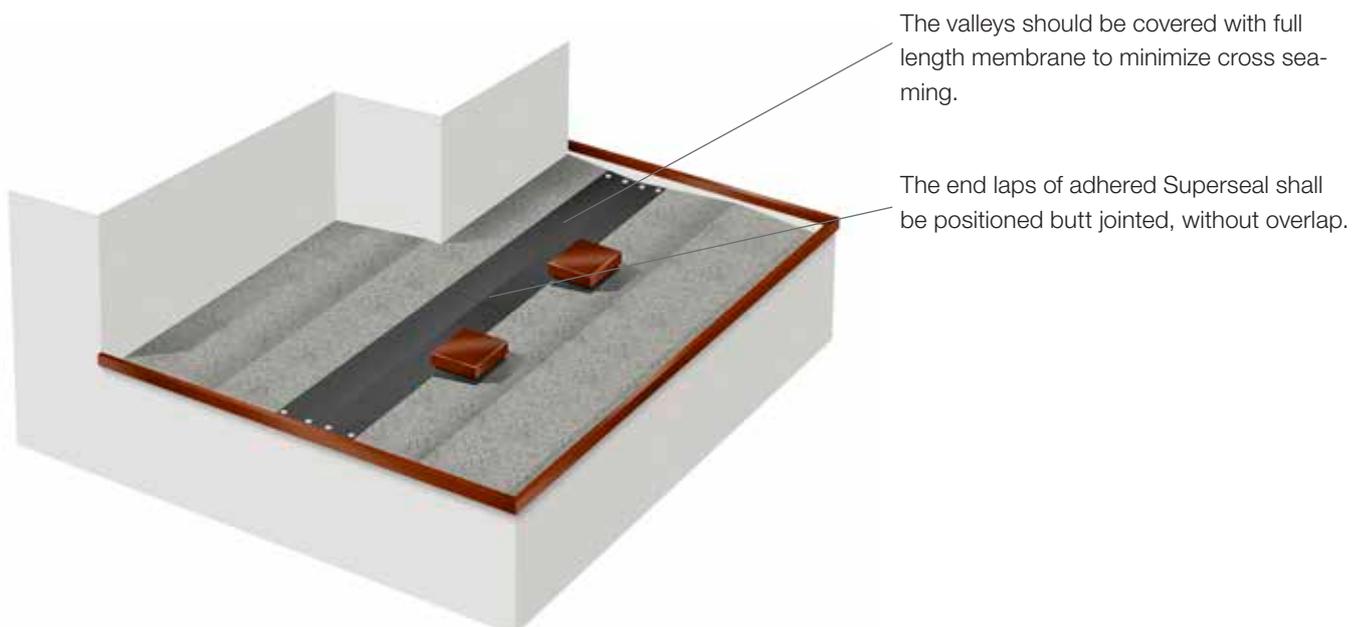
Adhered Superseal

The installation of adhered Superseal shall always start at the lowest parts of the roof either in a valley or at the lowest side. From this position the lay-out of the membrane is done cross the slope direction with a membrane overlap of minimum 50 mm.

The Superseal rolls shall be positioned so that they can be rolled out into their final position without adjustments.

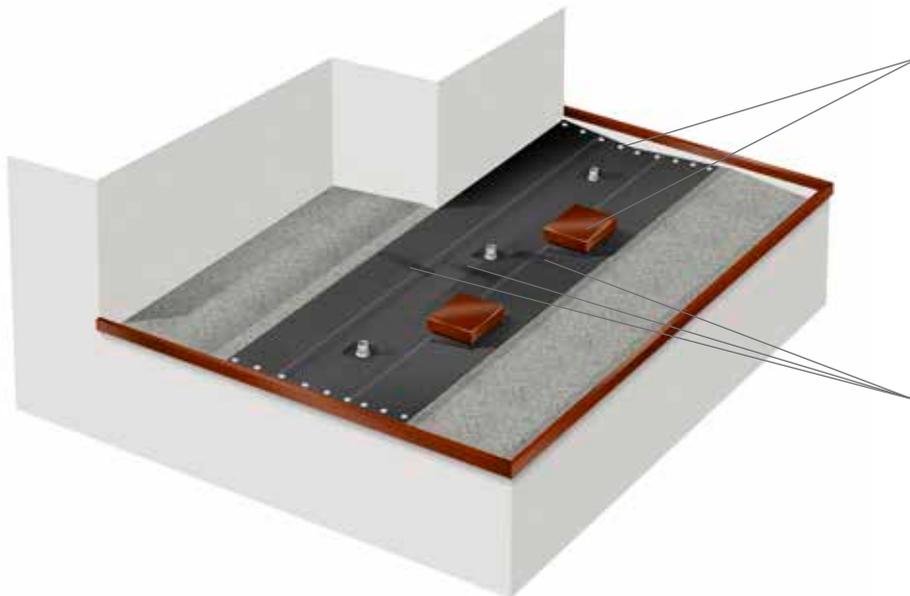


Measurements for positioning the Superseal for adhered application. There are two parallel lines printed on the membrane for guidance.



Membrane installation

Adhered Superseal



Mechanically attachment with screws and stress plates should be installed at all perimeters, upstands and around penetrating details in the roof field measuring 500 mm or more (side or diameter). The distance between these stress plates should not exceed 200 mm.

Cross-seaming of adhered Superseal is done with a cover strip of Thermobond R splice strip in the width 150 mm.

At roof slopes over 10° (>1:6) the membrane must be fixed mechanically at the upper side, with approved fasteners spaced 200 mm, to avoid sliding.

Make sure that the mechanical attachments is properly entered into the substrate and that the stress plate is close and tight to the Superseal. The stress plate should however not be too tight installed giving wrinkles in the Superseal membrane or entered into soft insulation. When working on soft insulation telescopic tubes should be used.

We recommend that all cuts and overlaps for splicing should be properly marked with a caulk line before execution. Straight line for cuts and splice is crucial for easy installation and good appearance.

Adhering with PUR-Adhesive

PUR-Adhesive 3200 is applied in beads by punching holes with a diameter of 6 mm spaced 50 mm in the can and using the can to spread the adhesive. The coverage shall be approx. 0.3 kg/m². Splice areas on the membrane shall be kept free from adhesive. Do not spread adhesive over larger roof areas than you can cover in approx. 20 minutes.

Wait (5-10 minutes) until the adhesive starts to swell and whiten before you roll out the membrane. Use a broom to brush the membrane so it is pressed down into the adhesive and lays smooth on the roof. The adhesive cures in 1-5 hours depending on temperature and humidity.

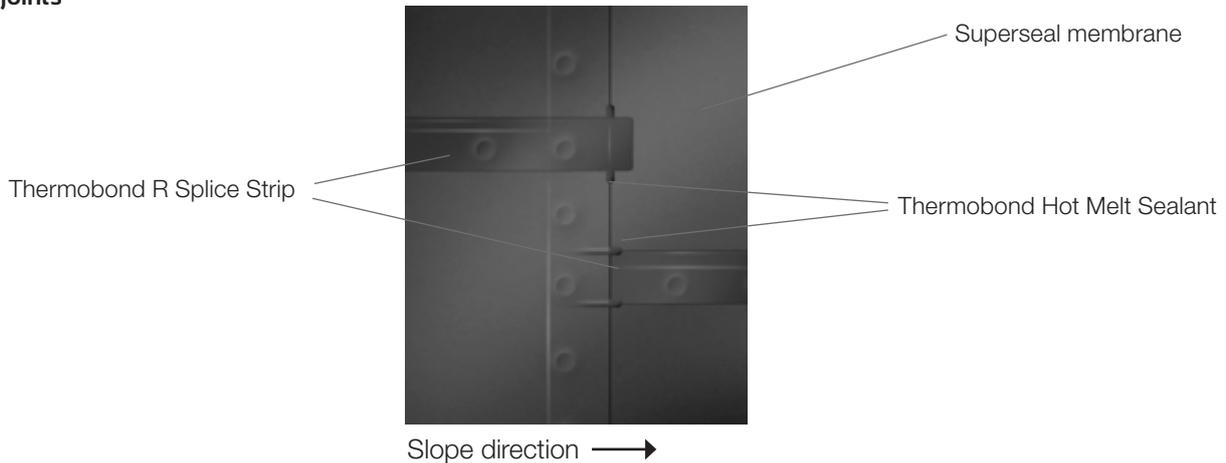
Adhering with Bonding Bitumen

The SBS-modified bonding bitumen shall be heated in a bitumen kettle to approx. +180 °C. The bitumen to be tapped into spreader and poured out in 10 cm strings spaced 10 cm or as S-shaped beads so that approx. 50% of the roof surface is covered by bitumen to a coverage of approx 0.5-0.7 kg per m² roof area. The splice areas of the Superseal shall be kept free from bitumen. Spread the bitumen evenly over the roof. Bitumen puddles or too high a temperature will cause discoloration of the Superseal. Note! Bitumen cannot be used to make waterproof seals between Superseal and details on the roof.

Membrane Installation

Details

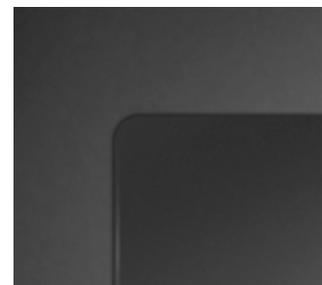
T-joints



All T-joints should be levelled in height by applying the Thermobond hot melt sealant before the upper layer is installed. The hot melt sealant is applied with hand held hot air blower and silicone roller and the sealant shall stretch minimum 10 mm outside the upper layer. Directly after the upper Superseal membrane or Thermobond R strip is spliced it shall be pressed to the hot melt sealant using a pressure roller.

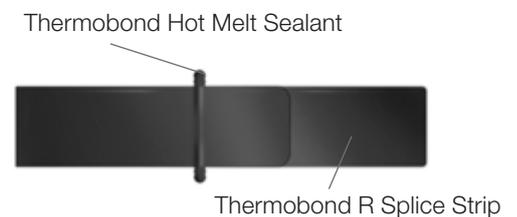
Visible corners

Visible corners in the top layer shall be rounded to a radius of approx 30 mm.



Prolongation of cover strip

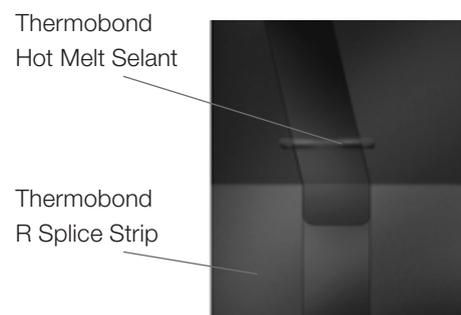
When Thermobond R splice strip needs to be prolonged this is done by overlapping the strip minimum 50 mm and welding the end lap. Visible corners to be rounded off at upper layer.



Cover strip passing over angles

All places where the Thermobond R splice strip are used as a cover strip (not as flashing!) passes over an angle $\geq 15^\circ$ it shall be broken with the underlying part passing the break line with min 50 mm. The upper Thermobond R splice strip should overlap min 100 mm and be seamed in place. Visible corners to be rounded off.

Note! The Superseal membrane must also be broken and fixated under these conditions.



Splicing

For the onsite seaming during the installation the Thermobond hot air seaming technique is applied. Automatic welders like Leister Varimat and Variant or similar should be used on all places where it is possible to do so. Handheld Leister Triac in combination with silicone or brass pressure roll is used for detail work and at locations with narrow space or for really short splices.

Recommended machinery

Machine	Application	Settings
Leister Varimat	Connections between Superseal membrane, Upstands with Thermobond R Flashing.	Temperature: 620°C Speed: 1,5-3 m/min Pressure: +15 Kg
Leister Variant	Connections between Superseal membrane, Upstands with Thermobond R Flashing.	Temperature: 10 Speed: 1,5-3 m/min Pressure: +15 Kg
Leister Triac	Detail work: corners, pipe boots, hot-melt sealant, repairs.	Temperature: 6-8 Speed and pressure: To be adopted Nozzle: 40 mm

Environment

Thermobond heat splicing can be made in ambient temperature in the range -20 to +50°C.

Thermobond seaming should not be done during precipitation, in the presence of excessive moisture, in areas of ponding water or during excessive winds.

Membrane

The splice areas of the membrane must be smooth clean and free from wrinkles.

It is of major importance that both areas that should be seamed together are heated before the contact areas are joined.

No stress should be build to a Thermobond seam.

Superseal should not be installed if the fleece backing is soaked with water as this won't give proper seaming conditions. After the fleece backing has dried out the problem will go away.

Splice Properties

Recommended splice width is 40 mm with automatic hot air machinery and 50 mm when splicing with hand machine and silicone roller. Minimum seam width is 30 mm.

Note that the Thermobond seam doesn't reach full strength until it has cooled down.

Temperature-Speed settings are correct when the Thermobond is melted into a pasty consistence without development of white smoke.

A test weld should always be done at start-up of each working shift. The sample should be examined and tested to assure good quality.

Oxidization

If Superseal is exposed to the sun for a longer period the surface oxidizes. This is not changing the properties of membrane but the quality and strength of the Thermobond splice is strongly affected. Therefore we recommend careful planning so that all splicing is done as soon as possible after Superseal lay-out. Another alternative is to cover the seam areas or to fold the membrane to protect seam areas. If the Elastoseal have oxidized the splice areas must be grinded with a grinding machine and nylon grinding disc followed by cleaning. The time it takes for oxidization to start is depending on the strength of the sun. Therefore it is of particular importance to do seam test before starting regular seaming.

Quality Assurance and Control

Quality control and assurance are essential elements in the installation of Superseal Roofing System.

As the quality of the waterproofing is highly dependent upon the workmanship of the installer only contractors that are trained and certified by SealEco are allowed to do installations.

Documentation

Each installation should be carefully documented including data on installed membrane.

Visual Control

Visual controls of the work and the quality should be done throughout roof installations. Problems and faults should be detected and fixed as early as possible. Controlling aspect should be:

- ◇ That correct material are being used and installed with the right equipment and that proper storing at site is assured.
- ◇ That the material is installed according to the guidelines of SealEco, local regulations and in accordance with good workmanship practice.
- ◇ That the material isn't risking mechanical abuse.

Splice Control

Test splices shall be carried out with every hot air machine at the beginning of each working period as well as longer interruptions.

The Thermobond shall be seamed with the intended machine settings to minimum length 200 mm and width 40 mm.

When the splice has cooled down to 35-40° C the splice is peeled by pulling the two sheets apart.

When the splice is peeled, it shall delaminate leaving Thermobond material on each membrane surface.

If the splice doesn't pass this test the equipment must be controlled, adjusted and a new test performed. Regular site splicing is not allowed until an approved test splice has been allowed.

Splice Strength Testing

The splice strength is controlled by destructive testing of a seam from the roof area.

A sample of min. 200x200 mm is taken centrally cross the splice. The hole shall be repaired according to our guidelines.

The test samples are tested by peel according to EN 12316-2 and should reach peel strength of minimum 100N/50 mm, typical value in peel is 150-250N/50 mm.



Splice Tightness Testing

The tightness of the seam shall be tested by running and applying some pressure with a blunt object like a screwdriver or similar along the seam. Extra attention should be addressed at corners, T-joints, penetrations and the roof perimeter.

An alternative tightness test is to use the air lance test method. This is executed by blowing compressed air perpendicular to the seam. If the seam has some deviation it will show and also the sound that the compressed air creates will change.

All deviation should be marked and repaired in suitable manner.



Supervision & Maintenance

The Superseal membrane is maintenance free and has excellent durability without any sort of treatment.

We recommend that the roof is inspected by an authorized roofer on a regular base and also after extreme weather like storms or excessive precipitation. During the inspection the function of the roof is evaluated and deviations should be handled. Details in the roof are of higher importance than the surface and should be carefully examined: skylights, ventilation, curbs, connections to walls, drains, and pipe penetrations.

To maintain good functionality of the roof it should be cleaned on a regular basis. All objects that aren't belonging on the roof should be removed like contaminations, vegetations and leaves. It is of extra importance to keep the drainage free so that dewatering can function as intended.

Superseal should never be exposed to aromatic hydrocarbons like oil, diesel or fat. If this type of chemicals should leak to the roof it must be removed immediately or it will damage the membrane.

Regular walking on the membrane should be kept to a minimum. If there is regular traffic this should be considered in the design by adding walkways or pavers in that area.

If snow or ice needs to be removed from a roof shoveling must be done carefully leaving minimum 5 cm on the roof surface to make sure that the membrane isn't damaged by the work.

Leakage

If a leakage into a building is detected there can be several reasons and a careful investigation must be done. Leakages does not necessary mean that there is a problem with the Superseal. Finding the problem includes considering:

- ◇ Mechanical damage of the membrane?
- ◇ When did the leakage first show?
- ◇ Weather conditions prior to leakage?
- ◇ Clogged drains or bad piping?
- ◇ Bad roof windows or ventilation shafts?
- ◇ Bad cladding in connection to the roof or the façade?
- ◇ Condensation from within due to wrong construction?
- ◇ Under what conditions does the leakage start/stop or does it constantly leak?
- ◇ Point of leakage in comparison to the slope of the roof (drained area)?

SealEco can assist in and have well developed techniques for finding leakages.

Repairs

Start by locating the damage and try to find out the reason for it: installation failure, mechanical damage etc. When the reason is established it's easier preventing similar damages to occur.

Measure the size of the damage and cut Thermobond R splice strip to the size required. If the damage area is bigger it can be repaired by applying new Superseal membrane that is spliced to the existing membrane. The overlap between the existing membrane and the repair must be at least 50 mm.

The surface of the existing membrane must be grinded with grinding machine (2500 rpm) and nylon disc before splicing. After grinding the surface must be cleaned with water or cleaning wash 9700 and be left to dry. Splicing is done according to regular methods for Thermobond splicing.



Refurbishment requirements

Before initiating a refurbishment of a roof an investigation should be performed. This should include finding the reason for the refurbishment and if some circumstances have led to shorten life span of the waterproofing than expected.

It is also importance to evaluate which components of the roof that can be reused and which that needs to be changed.

When connecting to an existing membrane other than Superseal or Elastoseal out on a surface a curb detail should be constructed. Both the Superseal and the other membrane should be terminated at the top of the curb and be covered by suitable coping.

EPDM

No specific action needs to be taken. Only inspection and treatment of troubled areas needs to be done like, sharp edges from metal details, nails and screws properly entered into substrate etc. It is not possible to adhere a Superseal as refurbishment to an old EPDM membrane.

BITUMEN

Old bitumen felt roofs must be swept clean, sealed and levelled. Stones and sharp objects shall be removed i.e. with a steel scraper. Wrinkles, blisters, waves and loose felt shall be cut off and repaired. All differences in height under Superseal seam areas should be levelled to be smooth.

PVC

During renovation of PVC roofs we recommend that the old PVC should be removed from the roof. A minimum requirement is that the PVC is cut loose at perimeters, at details and in sections over the roof. It is not possible to adhere a Superseal as refurbishment to an old PVC membrane.