



Installation Manual

RUBBERTOP



Installation Manual

RubberTop

Preface

The information in this manual is a guideline to provide 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 retains 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. RubberTop can only be installed after a successful training course. Please contact your local RubberTop supplier.

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1 General Instructions

Substrate

RubberTop can be used on all common roof constructions 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. Do not allow any remaining condensation in your substrate. It is the responsibility of the roofer to choose the correct roof design, taking into account all the roof parameters and desires from the customer and architect.

The roofing substrate shall have adequate strength and rigidity to carry actual loads from wind, snow, ballast, solar panels. We recommend a minimum slope of at least 2%. We can however assure you that RubberTop nor its splicing techniques are influenced by ponding water.

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. Note also that foaming agents present in cellular concrete might influence ageing properties of the RubberTop membrane. 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.

Vapour Barrier

When installing a 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. When possible SealEco recommends the use of an AluShell vapour barrier.

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 airtight to prevent convection and condensation.

Insulation

RubberTop can be installed upon different types 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 a compression strength at 10% deformation of minimum 60 kPa (60 kN/m²) to assure a proper installation. Apart from this all local demands have to be fulfilled.

Install only insulation suitable for the roof in accordance with the

guidelines of the supplier.

Polystyrene insulation can be melted by the solvents of adhesives and primers. For this reason we recommend that the insulation is covered by a protecting layer like an extra layer of RubberTop, a mineral wool board or bitumen felt around details. Automatic welders do normally not melt the insulation.

Make sure to control that the chosen insulation is suitable for adhesives. In case adhesion on naked EPS or MW is needed, please contact our technical department. EPS with a facer can be used when tests are available and allowed by the producer.

Keep Contact Adhesive 5000, Spraybond E245, Contact Adhesive P125, Single Ply Primer, Cleaning Wash 9700 and PUR Adhesive 3200 away from insulation that cannot resist solvents.

2 List Of Materials

All Technical Data Sheets and Safety Data Sheets can be consulted on our documentation app on www.SealEco.com. Availability depending on country. Contact your local supplier for more information.

2.1 Vapour Barrier

AluShell is a high-quality self-adhesive air and vapour control layer composed of a reinforced aluminum foil, a self-adhesive layer of high polymer SBS and a silicone protective film. Due to its high resistance to water vapour permeability, AluShell can be used for almost all flat roofs in combination with most indoor climate conditions. AluShell is available in two thicknesses 0.4 mm and 0.6 mm. AluShell 0.4 mm can only be applied in mechanically fixed roof applications.



2.2 RubberTop EPDM Types

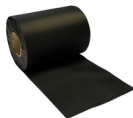
RubberTop S is a very high quality EPDM membrane with unique properties and installation techniques that distinguish the system from traditional low slope roofing. Due to his fabrication process and installation techniques it is environment friendly. RubberTop membranes are unreinforced and made to measure in 2 and 3 dimensions. On site splicing is possible with the cold splicing system. RubberTop S can be secured to the roof by mechanical fixation, ballasted, extensive green roofs, be adhered with PUR-adhesive, MS Polymer paste adhesive or contact adhesive.



RubberTop FR (FR = Fire Retardent) is a very high quality EPDM membrane with unique properties and installation techniques that distinguish the system from traditional low slope roofing. Due to his fabrication process and installation techniques it is environment friendly. RubberTop membranes are unreinforced and made to measure in 2 and 3 dimensions. On site splicing is possible with the cold splicing system. RubberTop FR can be secured to the roof by mechanical fixation, ballasted, be adhered with PUR-adhesive, MS Polymer paste adhesive or contact adhesive. The decisive factor when choosing product alternative is the required external fire classification. Because of the continuous testing and changes in insulation we recommend to contact our Technical Department for the actual allowed roof build ups.



Base Tie-In Strip is a reinforced EPDM membrane with polyester scrim 3*3*550. The membrane is delivered on rolls or prefabricated on the demanded dimension. The Base Tie-In Strip is always used in combination with fasteners and an appropriate Contact Adhesive.



2.3 Protection Layer - Non-Woven Polyester

Non-woven polyester textile used for membrane protection.



2.4 Adhesives - Cleaner - Sealant

Cleaning Wash 9700 is a technical petrol used for cleaning weathered rubber membranes before installation and repair



Contact Adhesive 5000 is a ready-for-use contact adhesive for adhering EPDM and Butyl membranes to horizontal and vertical substrates.

Coverage: 500 g/m²



E245 Spraybond is a sprayable contact adhesive with a fast drying formula of synthetic polymers and solvent, which by means of propellant gas with constant pressure is made sprayable without the help of electricity and compressor. Make sure to read and follow instructions for usage prior to use.

Coverage:

General use: 200 g/m² - Fleecebacked membranes: 450 g/m²



Handgun



Extension 61 cm



Hose



Adapter E17



Cleaner E17



Sprayable Contact Adhesive P125 is a contact adhesive to be applied with spraying equipment. Air pressure tools (compressor, electricity, hoses) are needed. Consult TDS and MSDS before use.

Coverage:

General use: 300 g/m² – Fleecebacked membranes: 450 g/m²



Pressure Vessel



Ecobond is an environmental friendly MS polymer based adhesive for adhering SealEco EPDM on horizontal and vertical surfaces like wood, concrete, metals (zinc, aluminum and steel) and bitumen. Ecobond is available in two versions, one for horizontal applications (Ecobond H) and one for vertical applications. (Ecobond V)

Coverage: 340 - 650g/m² for partial adhesion, 1100g/m² for full adhesion



Paste Applicator 600ml



Gun Ecobond 2800ml



Accessories



Primer 9800 is a polymer based primer for consequent use with self-adhesive SealEco rubber membranes, and for priming porous substrates.

Coverage: 125-250g/m² depending on substrate



Pur Adhesive P150 is used for adhering SealEco membranes on different substrates.

Coverage: 350 g/m²



Sealant 5590 is a neutral, elastic one-component joint sealant based on silicones. It has excellent adhesion to SealEco rubber and most substrates. The sealant is used for sealing details, repairs or sealing against substrates.

Coverage: 6 m/cartridge - 12 m/sausage



Water Based EPDM Roofing Adhesive is a solvent free acrylic emulsion adhesive, which is designed to give good bonding strength and a long open time. It is used for securing EPDM onto a range of standard absorbent roofing surfaces, e.g. fibreboard, chipboard, plywood, concrete etc.

Coverage: 300 g/m²



2.5 RubberTop: Tape Accessories

Single Ply Primer is used to prime SealEco membranes to provide a good adhesion between Seam Tape, Flashing Tape or Cover Tape and SealEco EPDM membranes. It can also be used to prime substrates such as concrete, plywood, OSB and metal.

Coverage: 200 g/m²



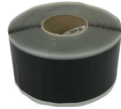
Scrub Held Handle



Scrub Pad



Seam Tape is used for joining two panels of SealEco EPDM together. The product is durable and flexible and provides immediate adhesion when in contact with the membrane. Seam Tape should always be used in combination with Single-Ply Primer.



Cover Tape is used for connecting and joining SealEco EPDM membranes. Cover Tape is mainly used for splicing of mechanically fixed membranes, securing of roof edge trims, repairs and details. Cover Tape is flexible and provides immediate adhesion when in contact with the membrane. The product should always be used in combination with Single Ply Primer.



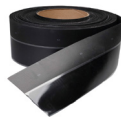
Flashing Tape is used for sealing off details, corners, pipes and T-joints on SealEco membranes. The tape provides immediate adhesion, is extremely flexible and can be shaped to seal off irregular details. Flashing Tape should always be used in combination with Single Ply Primer.



The **Self-Adhesive PE drain** is a roof drain equipped with a collar of self-adhesive Cover Tape that makes it directly installable to the membrane. The drain can be used horizontally as overflow. The pipe is made of polyethylene.



The **Reinforced Perimeter Strip** is used as a base tie-in for unbacked SealEco EPDM roofing membranes. The reinforced EPDM strip is partially coated with a Seam Tape and provides immediate adhesion to the EPDM membrane. Reinforced Perimeter Strip should always be used in combination with Single Ply Primer.



2.6 Tools, Machines And Other Accessories

Grinding Machine Flex for refreshing oxidised rubber surface before splicing. The machine is delivered with adaptation rings to fit the width of the grinding disc.



Accessories

Silicone pressure roller 40 mm



Silicone pressure roller 80 mm



Silicone pressure roller Leister 40 mm



PTFE roller Leister 28 mm



Brass detail roller



Brass detail roller Leister



Reinforced EPDM scissors



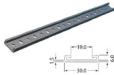
Protection tape



Kombi TS Screw + Plate



Battenbar 30 mm x 3 m



Pressure plate 40x80 mm



Pressure plate round Ø50 mm



i Availability depending on country. Contact your local supplier for more information.

3 Work Preparation - Quality Assurance And Control

3.1 Preparation Of The Workspace

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.

3.2 Materials Handling And Storing

Check upon delivery that the materials match the order acknowledgement, shipping documents and product labels. 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, metal pieces, etc.

3.3 Climatological Circumstances

When adhering RubberTop, or using Single Ply Primer and Tape splicing, the minimum temperature is +5°C. Even in case of precipitation, mist or risk of condensation, Tape splicing and use of adhesives will be stopped immediately.

3.4 Oxidisation

When RubberTop is exposed to the sun for a longer period the surface oxidizes. This does not affect the properties of the membrane itself but it will have an impact on the quality and strength of the splice. We therefore recommend careful planning so that all splicing is done as soon as possible after RubberTop is rolled out and fixed to the substrate. Another alternative is to cover the seam areas or to fold back the membrane to protect them, until splicing can be fulfilled according to the instructions. If the RubberTop has 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 oxidisation to occur, is depending on the strength of the sun. Therefore it is of particular importance to perform a splice test before starting regular splicing.

3.5 Quality Assurance And Control

Quality control and assurance are essential elements in the installation of RubberTop 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 and include data on the 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:

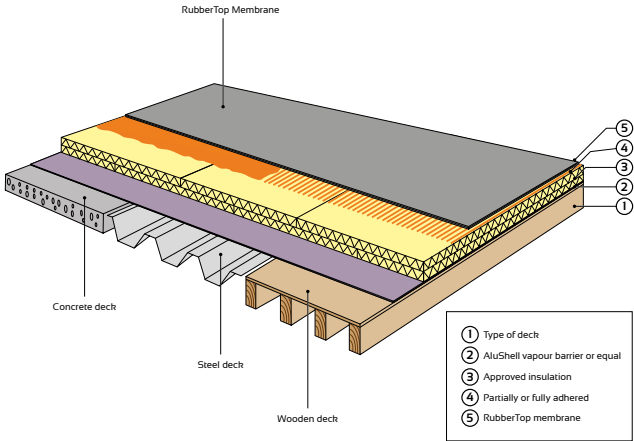
- That correct material are being used and installed with the right equipment and that proper storing at site is assured.
- That the material is installed according to the guidelines of SealEco, local regulations and in accordance with good workmanship practice.
- That the material isn't risking mechanical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

4 Roof Build-ups

i Information about installation, see chapter 6: Horizontal Installation of RubberTop.

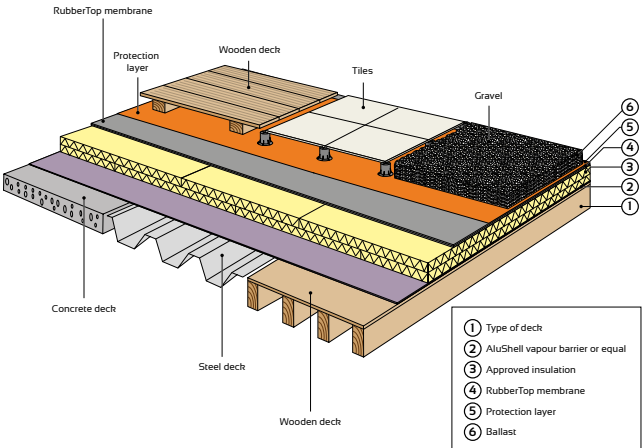
4.1 RubberTop Adhered

Figure 1



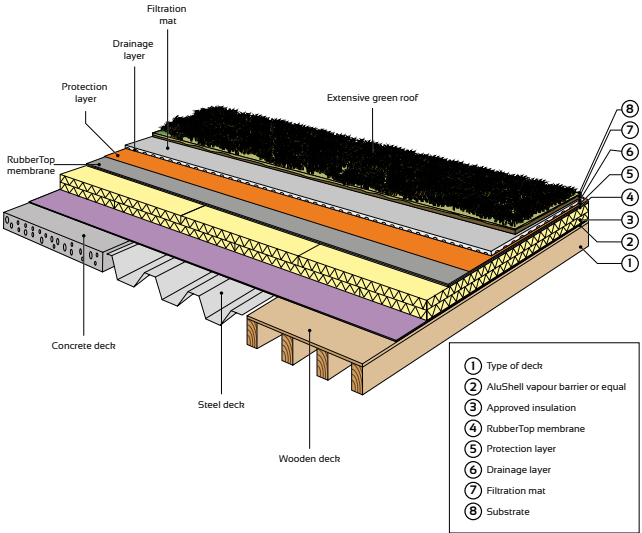
4.2 RubberTop Ballasted

Figure 2



4.3 RubberTop Green Roof

Figure 3



4.4 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 can be reused and which needs to be changed. Do also check the condition and installation of the vapour barrier especially around details.

When connecting to an existing membrane other than RubberTop out on a surface a curb detail should be constructed. Both the RubberTop 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 RubberTop as refurbishment to an old EPDM membrane. We only guarantee connections to SealEco EPDM membranes. All instructions need to be followed.

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.

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 and that an intermediate layer is installed (f.e. non woven polyester). Keep in mind that PVC tends to shrink and have an impact on the installation of the EPDM membrane.

It is not possible to adhere a RubberTop as refurbishment to an old PVC membrane.

5 Splicing

For the onsite seaming during the installation cold splicing technique is applied.

Cold splicing with Seam Tape technique can be used for seams and detailing.

Product availability depends on the country.

Following instructions have to be followed at all times:

- The membrane shall be dry and clean. If not dry and clean, the membrane should be cleaned with Cleaning Wash 9700.
- Don't use other products for cleaning, because they might interfere with the splicing techniques or be incompatible with RubberTop.
- Be sure that no moisture is under the membrane. This will have a huge impact on the strength of the splice and adhesion to the substrate.
- In case of precipitation all splicing will be stopped immediately.
- Never make splices when membrane is stretched. First take away all tensions.
- Folds in splicing are not allowed.
- All membranes installed, have to be spliced the same day.
- If RubberTop is exposed to the sun, and weather for a longer period the surface oxidizes. This does not change the properties of membrane but the quality and strength of the splice is strongly affected. Therefore we recommend careful planning so that all splicing is done as soon as possible after RubberTop lay-out. Another alternative is to cover the seam areas or to fold the membrane to protect seam areas. If the RubberTop has 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 a seam test before starting regular seaming.
- Visible corners in the top layer shall be rounded to a radius of approximately 30 mm.

Splice Tightness Testing

All splices have to be checked and tested, visually, with a blunt object or with air pressure. Extra attention should be addressed at corners, T-joints, penetrations and the roof perimeter.

When splice strength testing is asked by the building engineer, contact the Technical Department for more information.

5.1 Tape Splicing Technique

Seam Tapes are used for cold seaming of RubberTop. The same cold splicing technique is used for splicing of details with f.e. Flashing Tape, Cover tape,...

5.1.1. Application Prescriptions

Splicing Tape systems can be used for:

- adhered roof systems
- ballasted roof systems
- extensive green roofs (with application of an intermediate PE layer of min 0.4 mm)

Tape systems are always applied with Single Ply Primer. The strength of the seam is depending 100% on the contact between the primer, the EPDM and the tape. It is therefore extremely important to prepare the membrane properly. The Single Ply Primer will only be applied with a scrubber.

By scrubbing the RubberTop surface the Single Ply Primer will penetrate in to the irregular surface of the RubberTop membrane. Once flashed off, the Seam Tape, Cover Tape or Flashing Tape can be installed on the tacky surface. Full curing will take several days.

Limitations

The Tape Seam technique should not be used in temperatures below 5°C, above 30°C or during rain, mist, strong winds or when there is a risk of condensation. SealEco also recommends to store Single Ply Primer in room temperature (20°C) prior to use. At all times Single Ply Primer should have a temperature of min. 15°C when applying.

The EPDM membranes to be joined should be clean, dry, smooth and free from creases or tension. If necessary, the membrane can be cleaned with Cleaning Wash 9700 before joining.

Do not apply the Single Ply Primer in direct sunshine at warm sunny days. Protect the primed surface until Seam Tape, Cover Tape or Flashing is applied.

Scrubbing Pad

It is important to apply Single Ply Primer with a scrubber. The surface needs to be treated to have better grip. However only pass 3 times over the EPDM surface and for sure don't dry out the primer while scrubbing. One scrubbing pad can be used for splicing a roll of 30m, not more.

i Note: do not reuse a pad when it has dried out!

Single Ply Primer

Using a drill or mixer, mechanically stir the Single Ply Primer before use. Once stirred, the consistency of the Single Ply Primer changes and appears cloudy or like 'apple-sauce'. Pour out an amount of primer in a small container so the scrub pad can easily take up the needed amount of primer. Close the lid of the can immediately after. The poured out primer has to be used within 20 minutes so do not pour out a big amount of primer at once. It is not allowed to dilute the primer. If a new amount of primer is needed, again mechanically stir the Single Ply Primer before pouring out.

i Keep out of direct sunshine!

Do not stretch the joint and ensure it is smooth and free from creases. Carefully apply the Single Ply Primer, using a scrubbing pad (not a brush!), onto the entire splice area. The Single Ply Primer shall always be applied 5 mm - 10 mm wider than Seam Tape, Cover Tape or Flashing Tape.

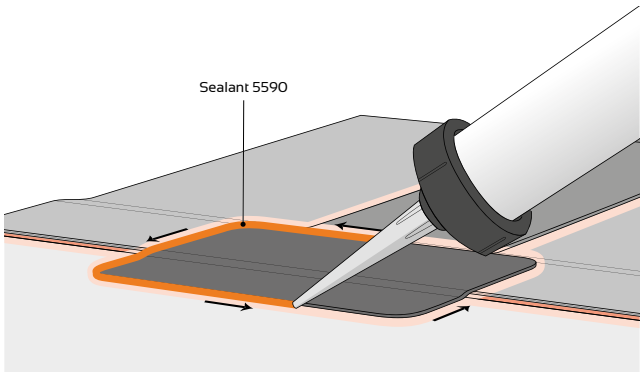
Once applied, leave it uncovered until it has flashed off, so it is touch dry but still tacky. Do not leave the applied primer open for more than 20 minutes at 20 °C and 50% relative humidity.

The splice will obtain its full strength after 48 hours once the surface has completely dried out. In case of precipitation or condensation after applying the primer, the surface has to be dried, and a new layer of primer is applied.

Risk For Capillarity

All cut edges and Flashing details need to be treated with Sealant 5590. Apply the sealant with a caulking gun as shown below. Level out the sealant immediately after with a scoop, do not use soap!

Figure 4



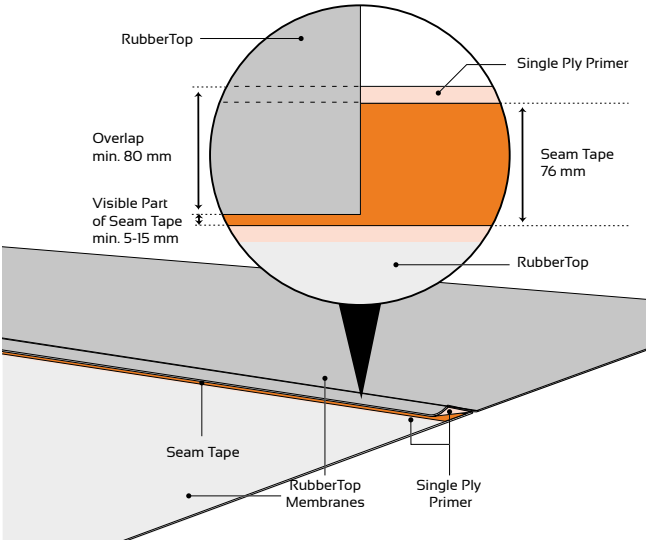
i Remark: Irregularities during splicing, f.e. folds, fishmouths, to narrow overlap,... should be repaired immediately with a Flashing Tape. See 5.2.4.

5.1.2. Seam Tape Details For Adhered And Loose Laid Applications

Seam Detail: Seam Tape

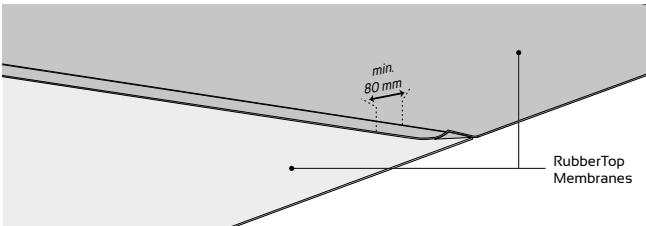
Seam Tape can be used for connecting RubberTop membranes. Position the RubberTop rolls with an overlap of minimum 80 mm. It is important that the tape is visible outside the overlap for at least 5-15 mm. The width of the splice will be minimum 60 mm. Single Ply Primer shall always be applied on the entire splicing area.

Figure 5



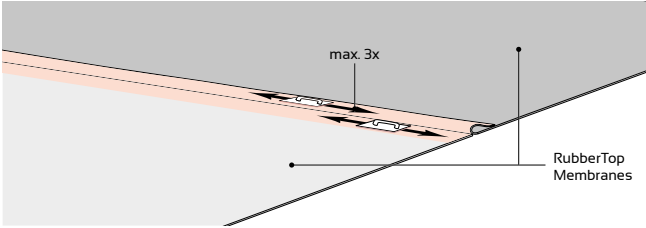
After positioning the first RubberTop membrane, unroll the second with an overlap of minimum 80 mm.

Figure 6



Fold back the splice area and keep it in position. Apply Single Ply Primer to both surfaces, according to the instructions. Wait until Single Ply Primer to flash off. Check by pushing and turning your thumb. When twisting, the thumb should not stick or move

Figure 7



Install the Seam Tape with the release film facing upwards. Align the release foil so that the minimum overlap is guaranteed. Unroll the Seam Tape. Roll with a 40 mm silicone roller without enclosing any air

Figure 8

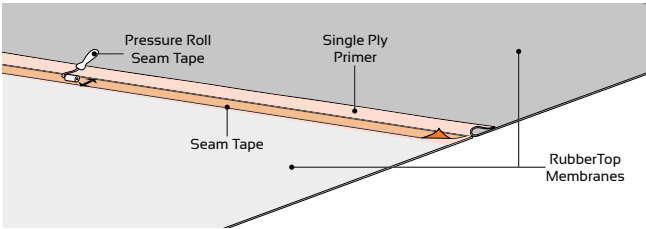
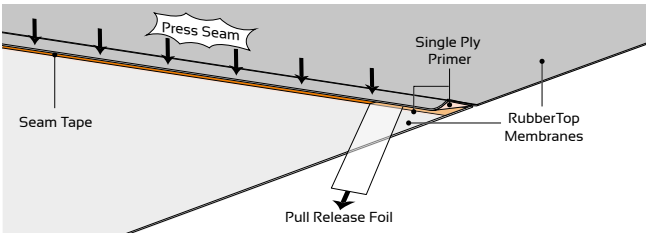
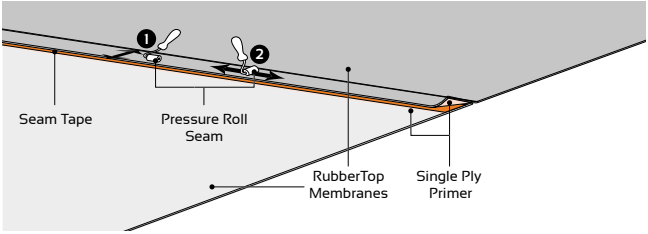


Figure 9



Close the overlap and remove the release foil by pulling it away at a 45° angle as shown in the next figures. Keep the release foil low to the roof surface to reduce air pockets. Press the overlap by hand to prevent wrinkles when rolling the seam. Avoid trapped air between Seam Tape and RubberTop overlap.

Figure 10



Seam Detail: T-Joint - Upper Membrane In Longitudinal Direction

When a longitudinal seam is on the upper layer a Flashing Tape shall be installed as instructed below.

Figure 11

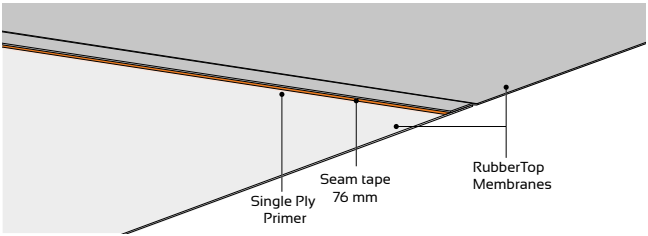


Figure 12

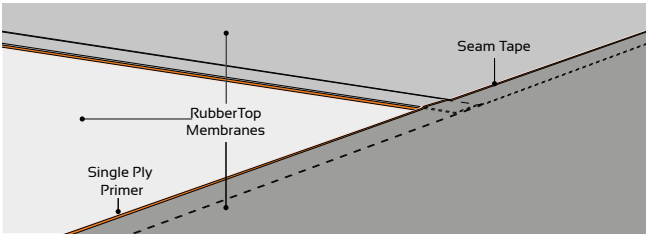
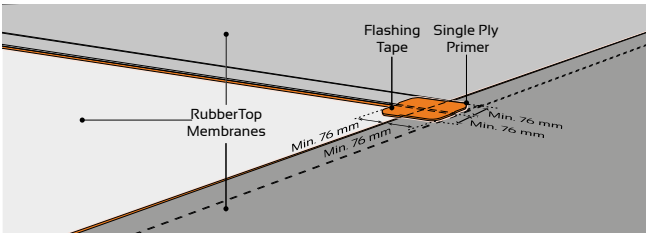


Figure 13



Seam Detail: T-Joint - Upper Membrane In Transversal Direction

When the transversal seam lies on top, cut the Seam Tape so that the edge of the tape and the edge of the RubberTop membrane are flush.

Cut any excess of RubberTop membrane at the inside of the seam away in a 45° angle.

Figure 14

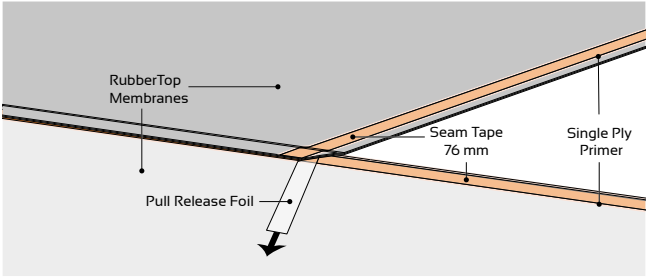
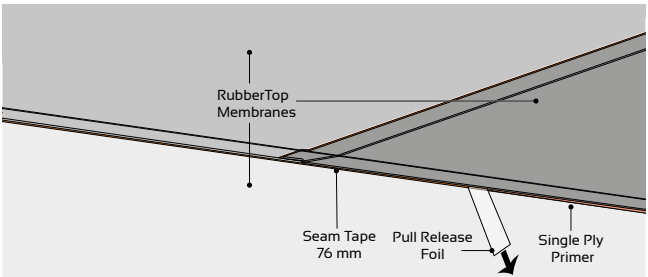
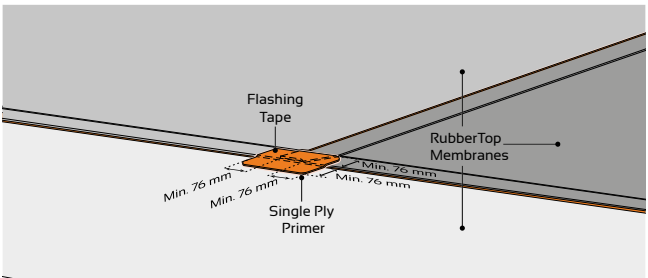


Figure 15



Install a Flashing Tape over the T-joint area as shown below. Secure the Flashing Tape with Sealant 5590

Figure 16

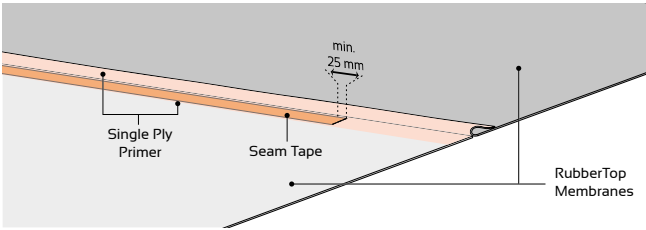


Seam Detail: End Of Seam Tape

When a Seam Tape has to be prolonged, following technique has to be followed:

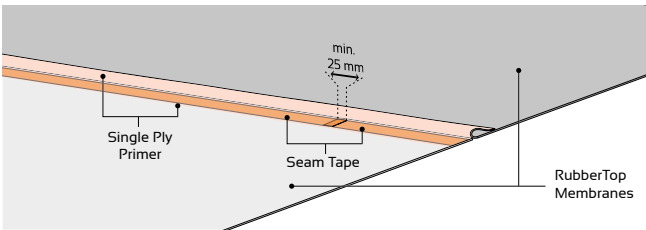
Apply Single Ply Primer onto both membranes over the entire length of the seam. Let it flash off. Position the Seam Tape but don't remove the protection foil yet.

Figure 17



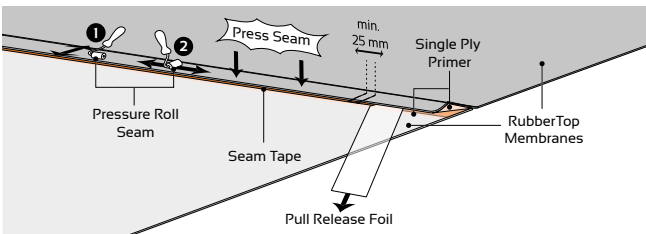
The adjoining Seam Tape is unrolled with an overlap of at least 25 mm. The overlap shall not be primed! Tear away only the release foil, where the tapes are overlapping.

Figure 18



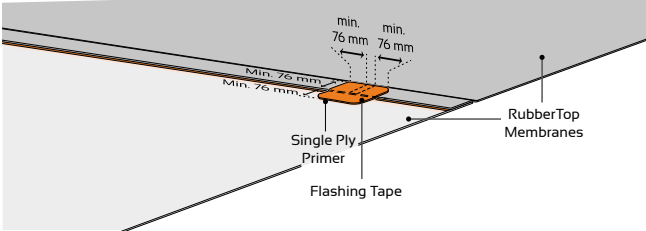
Close the overlap and remove the protection foil. First mate the overlap with your hands followed by rolling the seam with a silicone roller. First across and afterwards in the length of the seam. At all times 5-15 mm of tape shall be visible.

Figure 19



Cut a piece of Flashing Tape as shown on the next figure. Apply Single Ply Primer on the entire splicing area and install the Flashing Tape. Roll the surface with a 40 mm wide silicone roller. All T-joints will be pressed with a brass roller. Secure the Flashing patch with Sealant 5590.

Figure 20

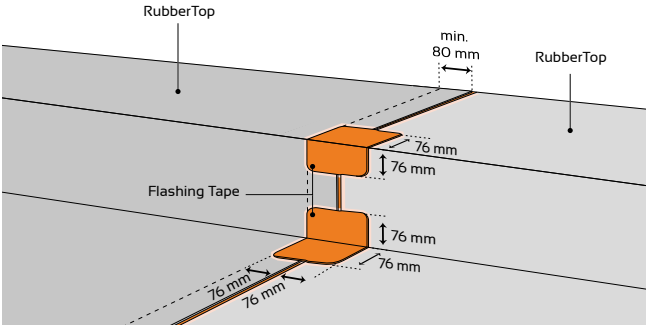


Seam Detail: Seam Tape Passing Over Angles

When a Seam Tape passes over an angle of $\geq 15^\circ$, an additional Flashing Tape has to be installed according to the drawings below. Follow all splicing instructions. Seal with Sealant 5590.

i Note: Tension in the RubberTop membrane is to be avoided at all times!

Figure 21



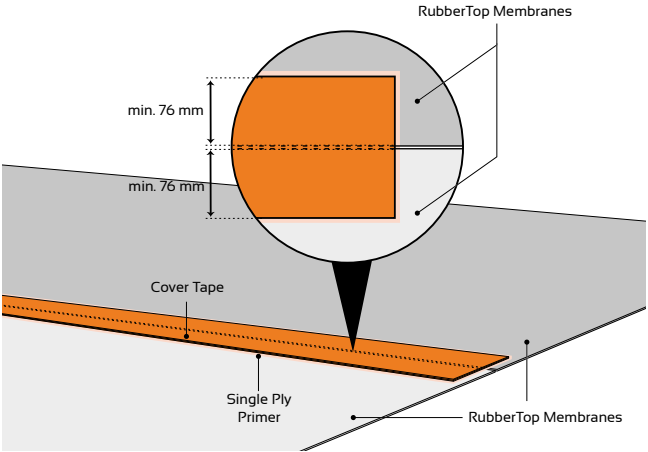
5.1.3. Cover Tape For Adhered And Ballasted Applications

Cover Tape can be used for connecting RubberTop membranes. Position the RubberTop rolls butt jointed in a straight line, preferably without overlap. Apply Single Ply Primer on the entire seam area of both membranes, according to the instructions. Wait until Single Ply Primer to flash off. Check by pushing and turning your thumb. When twisting, the thumb should not stick or move.

Unroll the Cover Tape over the full length of the seam area so a minimum seam width of 76 mm is reached.

Remove the PE release foil at a 45° angle and simultaneously mate the Cover Tape with the RubberTop membranes by hand. Keep the release foil low to the roof surface to reduce air pockets. Roll the seam with a silicon pressure roller of 40 mm. First across the seam, preventing trapped air, and afterwards in the length of the seam.

Figure 22

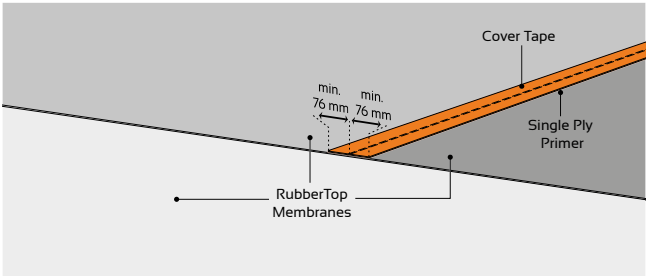


Seam Detail: T-Joint Cover Tape

There are two types of T-joints possible, depending whether the transversal joint covers the longitudinal or vice versa. In both cases, a Flashing Tape is necessary as shown in the next figures.

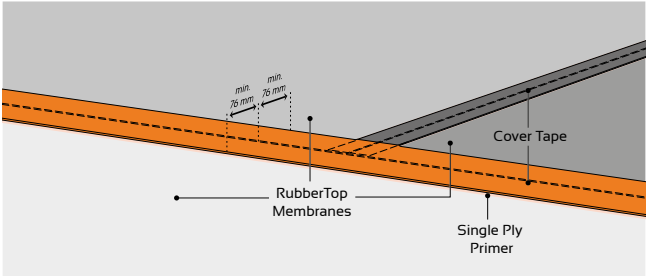
Preferably start with installing the Cover Tape in the transversal direction to minimize the size of the Flashing Tape that will cover the T-joint. Follow all splicing instructions

Figure 23



Apply the Cover Tape in the longitudinal direction. Make sure that Single Ply Primer is applied on the entire seam area

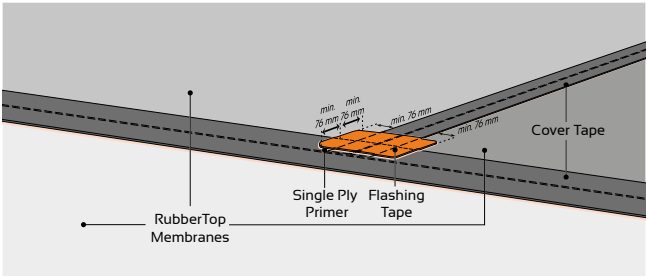
Figure 24



To prevent capillarity, T-joints are secured with a Flashing Tape. Cut a Flashing Tape as explained in the figure below. Position the patch, trace a line at 10 - 15 mm from the edge of the patch. Apply Single Ply Primer, let it flash off and install the Flashing Tape. Roll with a silicone roller as instructed before. T-edges to be rolled with a brass roller.

Secure the Flashing Tape with Sealant 5590.

Figure 25



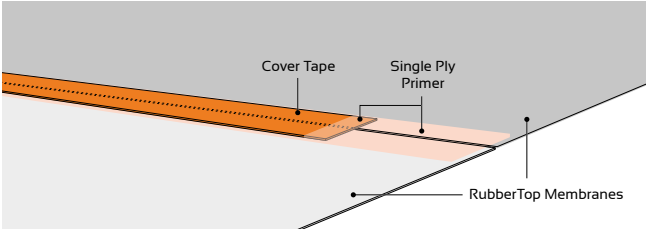
- i** Note: The Flashing Tape patch size will increase when the Cover Tape in the longitudinal direction is installed first.
- i** Note: When four RubberTop membrane corners have to be adjoined, the membranes will be installed in grid. Make sure the distance in between the transversal seams has a minimum of 1m.

Seam Detail: End Of A Cover Tape

When a Cover Tape has to be prolonged, the adjoining roll shall overlap at least 25 mm, as shown in the next figures.

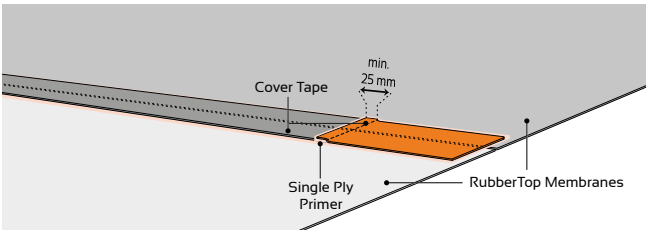
Apply the first Cover Tape. Apply Single Ply Primer for the adjoining Cover Tape and on the overlap.

Figure 26



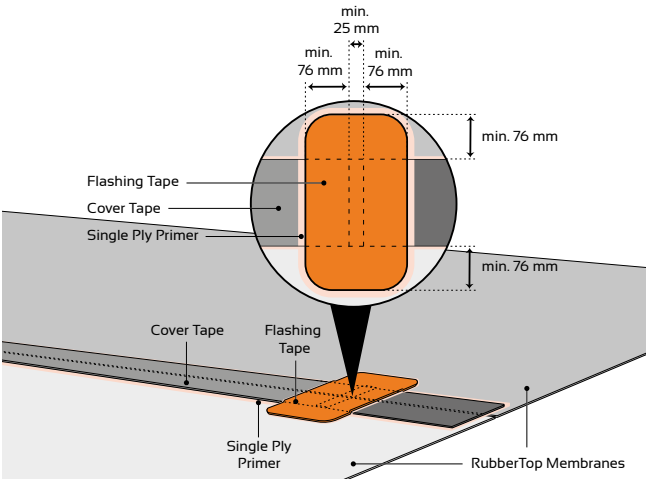
Unroll the adjoining Cover Tape with a minimum overlap of 25 mm.

Figure 27



Cut a piece of Flashing Tape as shown on the next figure. Apply Single Ply Primer on the seam area and install the Flashing Tape. Roll with a 40 mm wide silicone roller. Additionally roll all T-joints with a brass roller. Secure the patch with Sealant 5590.

Figure 28

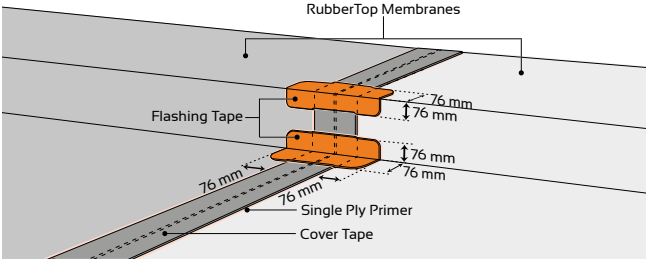


Seam Detail: Cover Tape Passing Over Angles

When a Cover Tape passes over an angle of $\geq 15^\circ$, an additional Flashing Tape has to be installed according to the drawings below. Follow all splicing instructions. Seal with Sealant 5590.

i Note: Tension in the RubberTop membrane is to be avoided at all times!

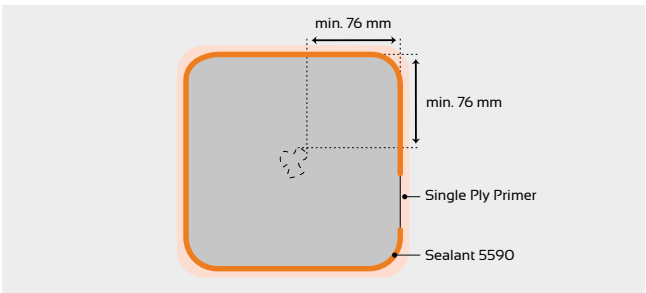
Figure 29



5.1.4. Tape Splicing: 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 is easier to prevent similar damage. Measure the size of the damage and cut a Flashing Tape piece to the dimensions required. If the damage area is bigger it can be repaired by applying a new RubberTop membrane. All seams can be done with Cover Tape following the general instructions for Tape Splicing. The surface of the existing membrane must be grinded and properly cleaned with Cleaning Wash 9700 and be left to dry. Apply Sealant 5590 onto all details, cut edges and T-Seams.

Figure 30



6 Horizontal Installation Of RubberTop

6.1 RubberTop Adhered

Substrate

RubberTop can be adhered on all common substrates like: concrete, wood, bitumen and insulation. Make sure that the adhesive is compatible with the insulation chosen. Check the technical data sheet of the insulation. Please contact our Technical Department for adhesion onto naked EPS and MW insulation.

We recommend that these types of insulation are coated with a mineral, polyester, or bituminous layer. Follow the installation instructions of the producer for installation of the insulation.

The substrates must be clean, dry (unless differently specified) and free of grease and oils. At roof slopes over 10° (>1:6) the membrane must be mechanically fastened at the upper side, with approved fasteners spaced 200mm, to avoid sliding.

Climatological Circumstances

The minimum temperature for adhering is 5°C. In case of installation at temperatures between +5°C and 15°C we recommend to store adhesives inside at 20°C. Depending on the type pre-heating up to 50°C could be an option. (Contact our Technical Department for more information.) Installation of RubberTop is not allowed during any precipitation, in the presence of excessive moisture, in areas of ponding water or during excessive winds.

Wind Load

The maximum allowed wind load will depend on the type of adhesive and the complete build-up of the roof.

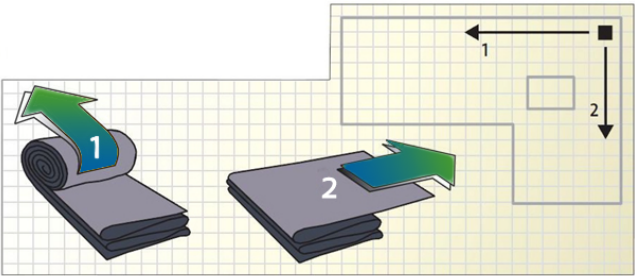
Wind load calculations have to be provided by the building engineer. In case of renovation a test adhesion is needed. Add this result in the "as built plan". For more information on the wind load for different roof systems please contact our Technical Department.

It is the responsibility of the roofer to choose the correct roof build-up. Depending on the wind load, and the roof build-up, a method for perimeter fixation and fixation around roof penetrations will be determined. More instructions are available in chapter 7 'Base Tie-In'.

- i** Note: when the allowed wind load for an adhered system is less than the actual wind load, a combination with a ballast layer can be an option. Please don't forget to check the load with the building engineer.

Panel Installation - Adhered

The prefabricated RubberTop panels are delivered in a rolled up bundle, generally on a pallet. The panels are lifted up to the roof and positioned on the roof according to the adjoined plan. The maximum size of the prefabricated panel is depending on the weight that is possible to handle on the building site and the weight the deck is able to handle.



After positioning the membrane on the indicated point, unroll and unfold the membrane carefully so that as little tension as possible is brought to the membrane. The panel can be moved in its final position by waving so that air comes underneath the membrane. Important: before any seaming, cutting or fixation of the membrane is done it must be allowed to relax for a minimum of 30 minutes in its final position.

Some wrinkles in the membrane can occur. This has no influence on the warranty of the membrane. RubberTop shall never be over stretched in order to get rid of every wrinkle. Wrinkles in splicing areas are not allowed and have to be taken away.

We recommend that all cuts and overlaps for splicing should be properly marked with a caulk line before execution. Straight lines for cuts and splicing is crucial for easy installation and good appearance. If there is more than one panel for a roof, they have to be spliced together on the roof. However, there is only a minimum of work that has to be done on the roof with splicing and fastening of the panel. It is possible to choose any level of prefabrication you like depending on site circumstances and available measures. The less prefabricated details, the more work will be left to do on the construction site. Consideration about how to handle these folded panels on the building site is important - both to safety and protection of the panel itself.

Spread the sheet out over the roof area according to our recommendations. Once the membrane has relaxed, start adhering

the membrane. the use of contact adhesives needs special attention and increases the risk for folds and wrinkles.

Types Of Adhesives

RubberTop can be adhered with different adhesives (availability depending on country):

- Adhesion with PUR Adhesive P150
- Adhesion with Ecobond
- Adhesion with Spraybond E245
- Adhesion with Spray Contact Adhesive P125
- Adhesion with Waterbased Adhesive WBA

6.1.1. RubberTop Adhered With PUR Adhesive P150

All general instructions have to be followed. Read the MSDS before use.

Directions For Use

PUR Adhesive P150 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 approximate 350 g/m². Splice areas on the membrane shall be kept free from adhesive. Clean the splice area with Cleaning Wash 9700 immediately when P150 was poured onto the membrane. Do not spread adhesive over larger roof areas than you can cover in approx. 20 minutes (at 20°C). Wait (5 - 10 minutes) until the adhesive starts to swell and whiten before you roll out the membrane. Immediately after unrolling the RubberTop use a broom to brush the membrane so it is pressed down into the adhesive and lays smooth on the roof. Repeat this after 30 minutes without stretching the membrane. In case of extremely dry substrates and low humidity, substrates or covering material should be slightly moistened. Minimum processing temperature is +5°C. In case of temperatures between +5°C and 15°C it is recommended to pre-heat the adhesive to a maximum of 50°C before use. The curing time can vary from 1 hour to 2 days, depending on temperature and humidity.

i Note: an excessive amount of adhesive will result in blisters.

Admissible Wind Load RubberTop Adhered With PUR Adhesive P150

Please contact our Technical Department for information concerning wind load values.

Suitable Substrates

P150 provides good adhesion on concrete, wood and old bitumen. Adhesion on bitumen with low melting point, with slates, sand or chalk is not allowed.

Adhesion On Insulation

Before adhering RubberTop on the insulation, the installer should consult the technical data sheet of the insulation and check if adhesion is allowed.

- i** Note: At roof slopes over 10° (>1:6) the membrane must be fastened mechanically at the upper side, with approved fasteners spaced 200 mm, to avoid gliding off.

6.1.2. Adhered With Ecobond V / Ecobond H

All general instructions have to be followed when using Ecobond. Read the MSDS before use.

Directions For Use

Ecobond is applied in beads by means of an adapted gun. The adhesive is applied in beads of approximate 10 x 5 mm with a distance of 120 mm.

Minimum processing temperature is +5°C. In case of temperatures between +5°C and 15°C it is recommended to pre-heat the adhesive to a maximum of 30°C before use.

Once the adhesive is applied, the membrane shall be unrolled within 10 minutes and pressed with a hard brush or roller, obtaining an adhesion width of approximate 25 mm/bead. It is important that, when adhering in beads, a distance of 120 mm between them is kept.

Curing will take between 1 to 15 days depending on the substrate, temperature and the humidity. Please take precautions when heavy wind loads are expected within 72 hours after installation. For partially adhered application coverage is between 340 and 650 g/m². Ecobond can be fully adhered but special precautions for curing have to be followed. By increasing the temperature, the viscosity drops and application speed increases. In case of dry substrates and low humidity, substrates or covering material should be slightly moistened.

Admissible Wind Load RubberTop Adhered With Ecobond Adhesive

Please contact our Technical Department for information concerning wind load values.

Suitable Substrates

Ecobond provides good adhesion on concrete, wood, old bitumen and metal. Adhesion on bitumen with low melting point, with slates, sand or chalk is not allowed.

Adhesion On Insulation

Before adhering RubberTop on an insulation, the installer should consult the technical data sheet of the insulation and check if adhesion is allowed.

- i** Note: At roof slopes over 10° (>1:6) the membrane must be fastened mechanically at the upper side, with approved fasteners spaced 200 mm, to avoid gliding off.

6.1.3. Adhered With Spraybond E245

All general instructions have to be followed when using Spraybond E245. Read the MSDS before use.

Directions For Use

E245 is a sprayable contact adhesive for bonding RubberTop to different substrates. The adhesive is applied with adapted spray equipment. E245 is delivered in pressurized canister, so compressed air is not needed. Spraybond E245 will only be used in fully adhered applications. Minimum processing temperature is +5°C. In case of temperatures between +5°C and 15°C it is recommended to pre-heat the adhesive to a maximum of 30°C before use. Splicing areas on the membrane shall be kept free from adhesive. Clean the splice area with Cleaning Wash 9700 immediately when E245 was sprayed onto the membrane.

When spraying, keep a distance of 10 - 25 cm to the substrate. Apply E245 evenly to coat both bonding surfaces. Let the E245 flash off until it is hand dry. Join the parts to be bonded together, without tension and press it firmly with a roller (drying time is about 2 - 5 minutes.) The coverage shall be 200 g/m². Maximum open time is 30 minutes (depending on atmospheric conditions).

Excessive adhesive, too short or too long drying time, humid substrates, dust,... will result in blisters. To assure proper application we recommend a training course before using this adhesive. During this training, roofers will also be informed about safe use and maintenance of spray equipment.

The curing time of the adhesive varies between 1 hour and 2 days depending on temperature and humidity.

Admissible Wind Load RubberTop Adhered With E245 Adhesive

Please contact our Technical Department for information concerning wind load values.

Suitable Substrates

Spraybond E245 is especially designed for bonding an EPDM membrane to building materials, such as: insulation, wood, concrete and steel. Surfaces must be clean, dry and free of dirt, dust, oil, paint and grease. Not to be used on bitumen. Concrete, cellular concrete or other porous substrate to be sprayed twice. First time left to dry as a primer before applying the adhesion layer. The coverage as a primer shall be approx. 150 g/m².

Adhesion On Insulation

Before adhering RubberTop onto an insulation board, the installer should consult the technical data sheet of the insulation and check if adhering is allowed.

- i** Note: At roof slopes over 10° (>1:6) the membrane must be linearly fastened mechanically at the upper side, with approved fasteners spaced 200 mm, to avoid gliding off.
- i** Note: Spraybond E245 is extremely flammable. Make sure to read material safety data sheet before transport, storage and use.

6.1.4. Adhered With Spray Contact Adhesive P125

All general instructions have to be followed when using P125. Read the MSDS before use.

Directions For Use

P125 is a sprayable contact adhesive for bonding RubberTop to different substrates. The adhesive is applied with adapted spray equipment and air pressure is needed. Spray Contact Adhesive P125 will only be used for fully adhered applications.

Minimum processing temperature is +5°C. In case of temperatures between +5°C and 15°C it is recommended to pre-heat the adhesive to a maximum of 30°C before use. Splicing areas on the membrane shall be kept free from adhesive. Clean the splice area with Cleaning Wash 9700 immediately when P125 was sprayed onto the membrane.

When spraying keep a distance of 10 - 25 cm to the substrate. Apply P125 evenly to coat both surfaces, substrate and backside of the RubberTop membrane. Let the P125 flash off. Unroll the membrane onto the substrate without tension, sweep away all enclosed air with a brush, and press firmly with a roller (drying time is about 2 - 5

minutes.) The coverage shall be approx. 300 g/m². Maximum open time is 30 minutes (depending on atmospheric conditions). Excessive adhesive, too short or too long drying time, humid substrates, dust, etc. will result in blisters.

To assure proper application we recommend a training course before using this adhesive. During this training, roofers will also be informed about safe use and maintenance of spray equipment.

The curing time of the adhesive varies between 1 hour and 2 days depending on temperature and humidity.

Admissible Wind Load RubberTop Adhered With P125 Adhesive

Please contact our Technical Department for information concerning wind load values.

Suitable Substrates

Spray Contact Adhesive P125 is especially designed for bonding an EPDM membrane to building materials, such as: insulation, wood, concrete and steel. Surfaces must be clean, dry and free of dirt, dust, oil, paint and grease. Not to be used on bitumen. Concrete, cellular concrete or other porous substrate to be sprayed twice. First time left to dry as a primer before applying the adhesion layer. The coverage as a primer shall be approx. 150 g/m².

Adhesion On Insulation

Before adhering RubberTop on an insulation board, the installer should consult the technical data sheet of the insulation and check if adhering is allowed. Adhering on naked EPS, and mineral wool is not allowed.

- i** Note: At roof slopes over 10° (>1:6) the membrane must be linearly fastened mechanically at the upper side, with approved fasteners spaced 200 mm, to avoid gliding off.
- i** Note: P125 is extremely flammable. Make sure to read material safety data sheet before transport, storage or use.

6.1.5. Adhered With Waterbased Adhesive WBA

All general instructions have to be followed when using WBA adhesive. Read the MSDS before use.

Directions For Use

WBA is used for fully adhered applications on porous substrates. The adhesive will be poured out on the substrate and evenly spread out with a roller.

The coverage shall be between 350 - 500 g/m². Splice areas on

the membrane shall be kept free from adhesive. Clean the splice area with Cleaning Wash 9700 immediately when WBA was poured onto the membrane. Do not spread adhesive over larger roof areas than you can cover in approx. 20 minutes (at 20°C). After applying the adhesive unroll the RubberTop and use a broom to brush the membrane so it is pressed down into the adhesive and lays smooth on the roof. Repeat this after 30 minutes without stretching the membrane.

Minimum processing temperature is +5°C. In case of temperatures between +5°C and 15°C it is recommended to pre-heat the adhesive to a maximum of 30°C before use. The curing time can vary from 1 hour to 4 days, depending on temperature and humidity.

i Remark: an excessive amount of adhesive will result in blisters.

Admissible Wind Load RubberTop Adhered With WBA Adhesive

Please contact our Technical Department for information concerning wind load values.

Suitable Substrates

WBA adhesive is especially designed for bonding an EPDM membrane to building materials, such as: wood and concrete. Surfaces must be clean, dry and free of dirt, dust, oil, paint and grease. Not to be used on bitumen and insulations. WBA adhesive is more sensitive to condensation compared to PUR, Ecobond and contact adhesives.

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

6.2 RubberTop Ballasted

All general instructions have to be followed. Install the RubberTop membrane as described in chapter 6.1. 'Panel Installation'.

It is very important that the structure can handle the weight of the ballast. Check where ballast can be placed before spreading out.

Ballast can carry out several functions:

- fully ballasted roof to withstand wind forces on the roof, in full
- additional weight to a mechanical or adhered roof to meet the needed wind load calculations
- fire regulations
- walking pads for frequent passage on roofs
- terraces
- green roofs

At all times a non-woven protection layer of min. 300 g/m² will be installed between the RubberTop membrane and the ballast layer. In case of an increased risk for damage, (f.e. big tiles, use of heavy equipment) during or after handling the ballast layer, a more performant protection layer has to be considered, to prevent any mechanical damage. Local approvals may differ.

Climatological Circumstances

When RubberTop is loose laid with only a ballast layer, the installation is not limited by temperature, however splicing is. We recommend following minimum and maximum temperatures for splicing:

- Thermobond hot air splicing: -20°C - +40°C
- Cold splicing techniques: +5°C – +30°C

i More detailed instructions are available in the chapter 5: 'Splicing'.

i Installation of RubberTop is not allowed during any precipitation, in the presence of excessive moisture, in areas of ponding water or during excessive winds.

Wind Load

The weight of the ballast must be adapted for each building and be based upon local conditions and requirements. Examples that influence the needed load from ballast are: wind zone, terrain, height and shape of building, height of parapets, wind- and airtightness of the building, etc. We recommend at all times a ballast weight of minimum 80 kg/m². If less ballast is applied, additional fixation of the membrane is needed. The influence from wind load is always bigger in the corners and at perimeters of the roof than in the field. Therefore gravel ballast e.g. shall be applied with a thicker layer in corner and perimeter zone than in the field.

A general guide to designing gravel thickness can be:

- Thickness x 1 in Field Zone
- Thickness x 2 in Perimeter Zone
- Thickness x 3 in Corner Zone

Apart from the weight of the ballast layer, also the weight of each separate ballast piece has to be considered. The choice for the size of gravel, the thickness and size of pavers are part of the wind load calculation and have to be provided by the building engineer. At all times the ballast shall be applied immediately after installation of the RubberTop membrane.

Types Of Ballast

Examples of suitable ballast are: gravel, pavers, concrete or timber. A combination of them is also possible. Important for a ballast layer is that the weight is spread out equally over the surface. Big plants/trees on the roof, solar panels, technical installations, etc. are not to be counted as a ballast load as such.

6.2.1. Ballasted With Gravel

When ballasting RubberTop, a protection layer type nonwoven polyester of min. 300 g/m² will be unrolled between the gravel and the EPDM. The nonwoven polyester will be unrolled with an overlap of minimum 300 mm. Only washed and uncrushed gravel can be used as ballast layer.

The maximum slope of a roof with gravel is 5%.

When gravel is used for fire protection, a thickness of minimum 50 mm is needed.

Check local demands for more details and exceptions.

6.2.2. Ballasted With Tiles And Pavers

There are different ways of installing pavers and tiles on a waterproofing. Check that the weight of the tiles can withstand the wind load. Tiles and pavers can be laid in sand or on paving supports. A protection layer is needed at all times. In both cases it is very important that the upstand is well protected so that tiles can't perforate the RubberTop membrane. When using tiles on terrace supports, the compression strength of the insulation must be sufficient. Also foresee a thick protection between the RubberTop and the supports.

- i** When tiles are used for fire protection, a thickness of min 40 mm is needed. Check local demands for more details.

6.2.3. Ballasted With Timber

Make sure to install the correct load to a timber deck roof considering that the density of the timber itself might be insufficient to give proper resistance to the wind load. Install a protection layer of at least 300 g/m² between EPDM and wood.

- i** Note: If the timber deck shall be treated with wood oil, or similar there must be a protection layer like polyethylene foil on top of the RubberTop to prevent chemical damage.
- i** SealEco advises to fasten the membrane at all times, when the roof is ballasted with a wooden deck roof.

6.3 RubberTop Green Roof

All general instructions have to be followed. Install the RubberTop membrane as described in chapter 6.1. "Panel Installation". It is very important that the structure, the insulation and all other layers can withstand the weight of the green roof. This means the system, vegetation, insulation, water, etc.

Types Of Green Roof

Seams of RubberTop will be spliced with a cold splicing technique. Be aware that there are two different green roof systems:

1. Intensive green roof:

The weight of intensive green roofs starts at 100 kg/m², and the type and amount of layers will depend on the vegetation. This type of green roof can be chosen for slopes up to 30°. At all times the membrane and its splicing method should pass the test for root penetration according to EN 13984 or FLL. Even when passing these tests, supplementary protection is needed to prevent damage during installation and because of aggressive roots.

RubberTop Fleece can not be used in combination with intensive green roofs.

- i** Seek advice at your green roof supplier.

2. Extensive green roof:

The weight of an extensive green roof varies from 20 to 100 kg/m². This mainly depends on the water content. Extensive green roofs can be installed on roofs with slopes up to 35°.

RubberTop with hot air splicing, can be used for extensive green roofs without root penetration layer. When cold splicing is used a PE layer of at least 0.4 mm shall be installed on top to the RubberTop membrane. The PE layers shall be unrolled with an overlap of at least 1m. Make sure to follow all national guidelines.

Wind Load And Adhesion

We recommend at all times to fix the RubberTop in combination with green roofs. This is also compulsory in several countries because of national regulations.

- i** Note: Don't forget that the weight of an extensive green roof, in dry conditions, might not be sufficient to function as a proper ballast layer!
- i** In case of slopes above 10° adhesion or mechanical fastening is needed.

Thickness

Depending on national regulations the minimum thickness for RubberTop can vary.

SealEco advises a minimal thickness of 1.1 mm for fleecebacked EPDM membranes and a minimal thickness of 1.5 mm for standard EPDM membranes to minimize the risk for mechanical damage during installation of the green roof system.

- i** Note: Please check the roof together with the architect, building engineer or building owner before installing the green roof layers. If possible make a smoke or water test. You don't want to be held responsible for damage made by the green roof installer, etc. Rhizomes and aggressive roots might penetrate the membrane and its splices. Contact our Technical Department for more information.

7 Base Tie-In

During the handling and production of RubberTop EPDM membranes, stresses are introduced. This is inherent for all elastomeric membranes. Apart from these stresses also the thermal influence and the structural movement of buildings necessitate fastening of the RubberTop membrane alongside all roof edges, walls, drains, pipes and skylights. All places where the substrate makes a change in angle greater than 10° should be considered as an upstand and treated accordingly

Base Tie-In Design

The design of the base tie-in depends on the actual stresses. When the securement is insufficient, the RubberTop will pull away. We recommend at all times to use a mechanical fastened base tie-in. In some cases adhered base tie-in solutions are allowed. But it is the responsibility of the roofer to choose the correct base tie-in method.

Mandatory Mechanical Base Tie-In

In following cases a mechanical fastening is required:

- On all metal and wooden constructions that are air open.
- When using a separate upstand strip.
- Wind load > 1500 Pa
- In case of loose laid insulation or underlayer
- Roofs with a slope of 10% or more.
- Insulation with high risk of delamination, like f.e. uncoated mineral wool, EPS, etc.
- Roofs > 50 m².
- Parapets with height > 500 mm.
- Installation directly on screed, EPS mortars.
- Installation on bitumen coated with slates or sand.
- Installation on substrates not compatible with adhesives.

Allowed Adhered Base Tie-In RubberTop

In some cases a perimeter fixation with adhesives can be allowed. But only under these conditions:

- The application is not part of the list of mandatory mechanical fixed base tie-in mentioned above.
- Follow the special instruction for splicing in roof edges, and along parapets.
- Parapets are fully adhered and fixed mechanically at the top.
- ❗ Note: Adhered base tie-in on coated insulations are always risky because of the limited and changing adhesion of the facer to the insulation. Delamination between facer and insulation itself is out of control of SealEco and is the responsibility of its producer. It is very important to check the TDS of the insulation and compatibility with the applied adhesives.

7.1 Mechanical Fastened Base Tie-In RubberTop

Follow the general instructions for adhering or ballasting the RubberTop membrane. Use the correct fasteners, washers or termination bar. The admissible pull out load of the fasteners shall be minimum 400N. Washers can only be used when a Reinforced Perimeter Strip is installed as base tie-in.

SealEco prefers perimeter fixation in the horizontal roof surface, but allows vertical base tie-in when roof build-up is too thick, or when the horizontal roof surface is not suitable for fastening. All washers or Batten Bars should be installed as close as possible to the angle changes, following these directions:

- Maximum distance to change of angle is 20 mm (except Thermobond Induction Plate).
- Minimum distance to the edge of the membrane is 10 mm.
- Fasteners shall be placed at 200 mm from an inner or outer corner.
- The distance in between the fasteners shall be maximum 200 mm.

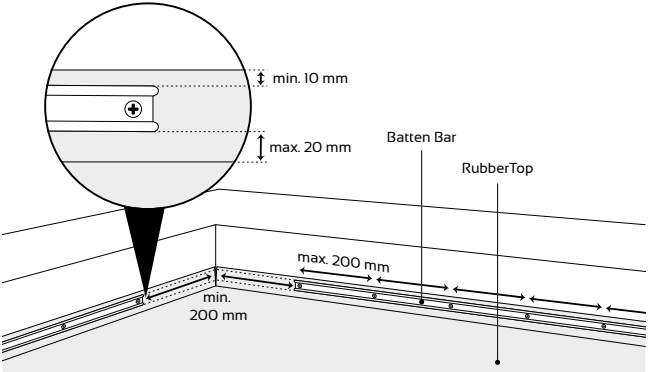
For the upstand a RubberTop strip can be used. It has to be fully adhered to the substrate and spliced to the membrane. For the Base Tie-In fixation of unreinforced only a linear fixation is allowed.

In the following chapters all possible base-tie in methods are explained.

7.1.1. Base Tie-In: Separate Upstand Strip

The RubberTop membrane covers the horizontal roof part and a minimum of 60 mm of the upstand. A batten bar is installed according to previous mentioned directions. The upstand will be flashed with a RubberTop membrane as described in chapter 8.

Figure 31



7.1.2. Base Tie-In With Reinforced Perimeter Strip

The RubberTop membrane will cover both the horizontal roof part as the upstands. Prior to fastening the membrane on the horizontal roof part a Reinforced Perimeter Strip will be installed. The Reinforced Perimeter Strip can be fastened vertical in the upstand or horizontal in the roof surface. Make sure no wrinkles are present before or after fastening the Reinforced Perimeter Strip.

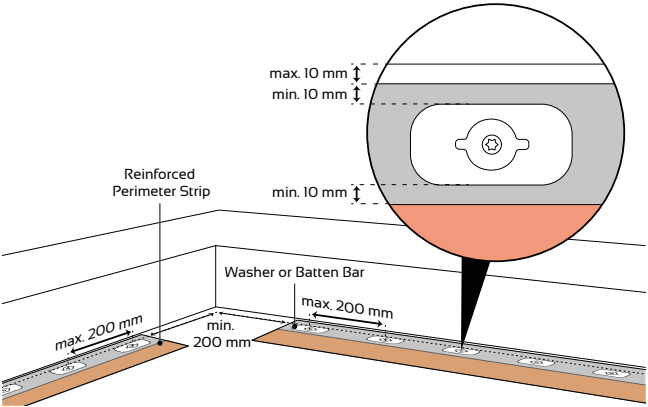
To fasten the strip both battenbars as washers can be used.

Reinforced Perimeter Strips may not overlap. To adjoin strips they will be butt-joined.

Horizontally Fastened Reinforced Perimeter Strip

Unroll the Reinforced Perimeter Strip flat on the surface as close as possible to the angle change. The maximum distance in between the upstand and the strip is 10 mm. The selfadhesive part of the RPS strip will always be lying on the horizontal roof deck, with the tape facing upwards. The fixations as close as possible to the upstand. Install the fasteners as show in the next figure.

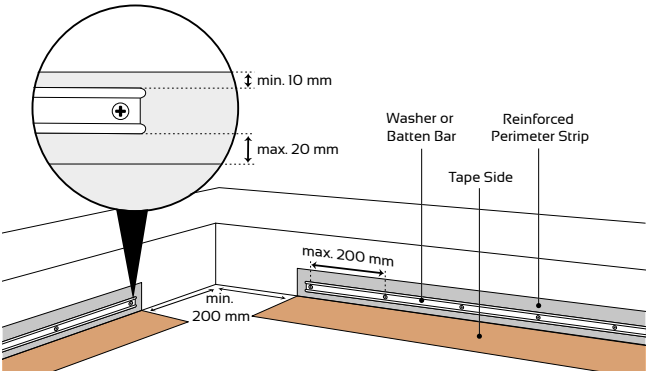
Figure 32



Vertically Fastened Reinforced Perimeter Strip

Unroll the Reinforced Perimeter Strip alongside the upstand. Position the part of the strip without tape against the upstand. The entire width of the tape is lying on the horizontal roof surface facing upwards. Fasten the strip in the upstand as explained before and as shown in the figure below.

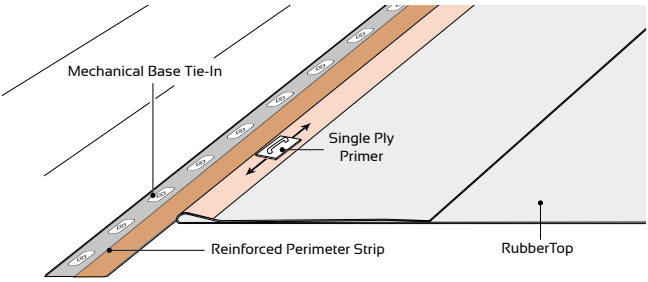
Figure 33



Connecting The RubberTop Membrane To The Reinforced Perimeter Strip

After installation of the Reinforced Perimeter Strip, lay out and if needed adhere the RubberTop membrane as described in chapter 6. Position and fold back the RubberTop membrane as close as possible to the tape side of the Reinforced Perimeter Strip. Make sure the membrane is perfectly aligned alongside the tape and apply Single Ply Primer on the RubberTop membrane corresponding with the tape area.

Figure 34



When flashed off remove the protection foil from the tape and adhere the RubberTop membrane on the tape side of the Reinforced Perimeter Strip. Mate by hand while doing so and firmly roll with a silicon pressure roller afterwards. First across, than in the length of the tape to avoid trapped air. Make sure that the remaining part of the Reinforced Perimeter Strip will be fully adhered to the RubberTop membrane.

Figure 35

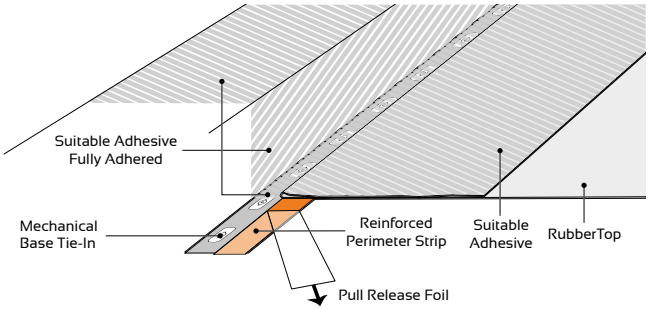
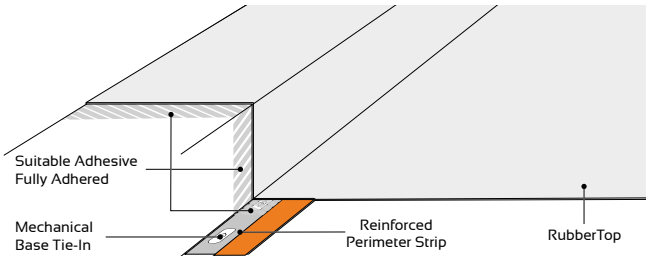


Figure 36



7.1.3. Base Tie-In With Base Tie-In Strip

The RubberTop membrane will cover aswell the horizontal roof part as the upstand. Prior to fastening the membrane on the horizontal roof part a Base Tie-In Strip will be fastened. The Base Tie-In Strip will be fastened vertical in the upstand. Do not allow wrinkles during fixation.

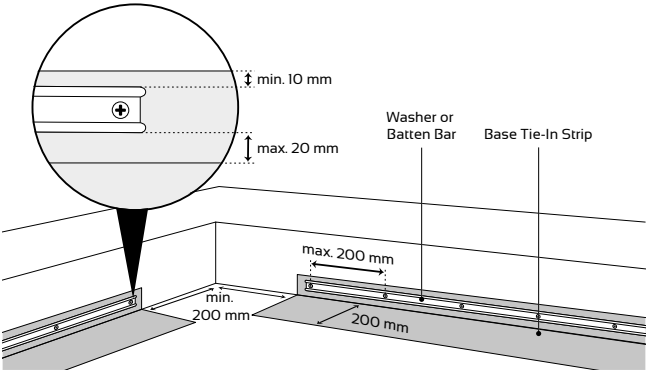
To fasten the strip, battenbars and washers can be used.

Do not overlap Base Tie-In Strips. Adjoining strips will be buttjoined.

Vertically Fastened Base Tie-In Strip

Unroll the Base Tie-In Strip alongside the upstand. Position 50 mm of the strip against the upstand. Fasten the strip in the upstand as mentioned before and as shown in the figure below.

Figure 37



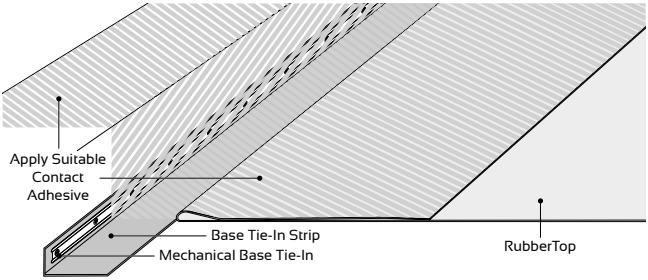
Connecting The RubberTop Membrane To The Base Tie-In Strip

After installation of the Base Tie-In Strip, lay out and if needed adhere the RubberTop membrane as described in chapter 6: 'Horizontal Installation Of RubberTop'.

Position and fold back the RubberTop membrane as close as possible to the Base Tie-In Strip. Make sure the membrane is perfectly aligned alongside the Base Tie-In Strip and apply Contact Adhesive 5000 or E245 Spraybond as shown in the next figure.

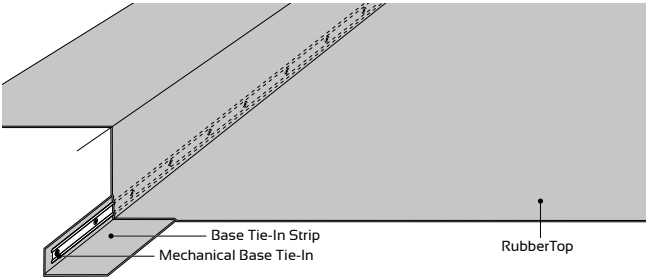
Clean the strip if needed before adhering.

Figure 38



When flashed off, adhere the membrane onto the Base Tie-In Strip and onto the upstand. Roll firmly with a silicon pressure roller afterwards.

Figure 39



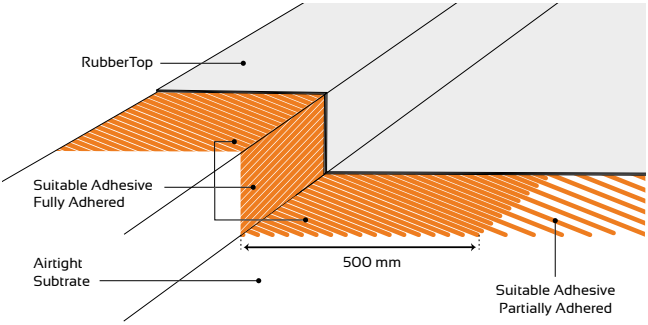
7.2 Adhered Base Tie-In RubberTop

Follow the general instructions for adhered and ballasted roofs. Check that all parameters for adhered perimeter fixation are fulfilled. We make a distinction between adhered and ballasted roofs.

7.2.1. RubberTop Adhered Application

The RubberTop membrane is adhered with approved adhesives on the horizontal surface. When RubberTop is adhered it is needed to fully adhere 500 mm around the perimeter and upstands with Contact Adhesive 5000, E245 Spraybond, Sprayable Contact Adhesive P125, or with Ecobond. Adhesion of the upstand is explained in chapter 8.

Figure 40

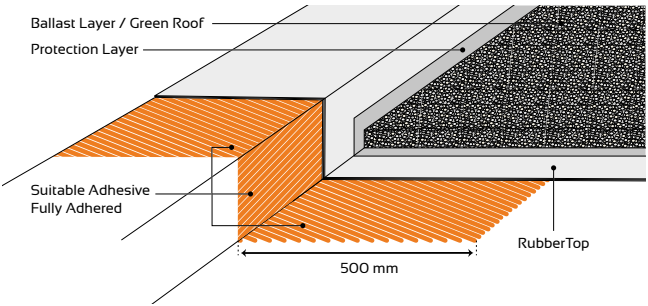


7.2.2. Base Tie-In RubberTop Ballasted And Green Roofs

Follow the instructions for installing RubberTop for ballasted and green roof applications. When it is allowed to install RubberTop, with ballast or a green roof system without any adhesive, and when a mechanical base tie-in is not mandatory, a fully adhered base tie-in is allowed with Contact Adhesive 5000, E245 Spraybond, Sprayable Contact Adhesive P125 or with Ecobond V. Check the compatibility before use.

The width of the adhered base tie-in is minimum 500 mm.

Figure 41



8 Upstands

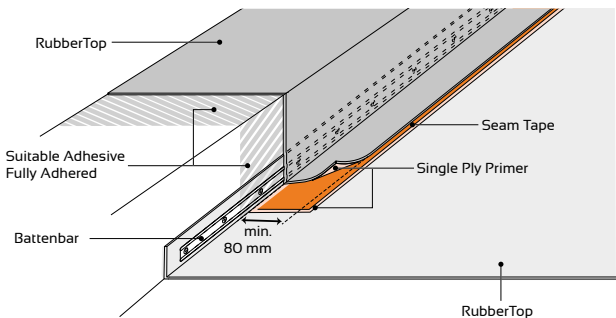
All places where the substrate makes a change in angle greater than 10° shall be considered as an upstand and treated accordingly. SealEco advises at all time to make a mechanical anchoring. This is done in addition to the membrane securement in the field area and should be done at perimeters and walls but also for penetrations in the field. Upstands can be covered with RubberTop strips. It is recommended that the upstand shall be fully adhered with an appropriate adhesive. Wind open upstands, skylights, details etc. have to be sealed properly before applying the EPDM membrane.

8.1 Upstand With Cold Splicing Technique

8.1.1. Upstand Strip With Seam Tape

The horizontal surface is installed according to the instructions. A mechanical base tie-in is foreseen in horizontal or vertical substrate by using a batten bar (see chapter 7). A RubberTop strip is fully adhered on the upstand with Contact Adhesive 5000, Ecobond V, Spraybond E245 or Spray Contact Adhesive P125. Firmly roll the RubberTop strip with a pressure roller. Splicing of the overlap on the RubberTop membrane is done according to the cold splicing instructions (chapter 5).

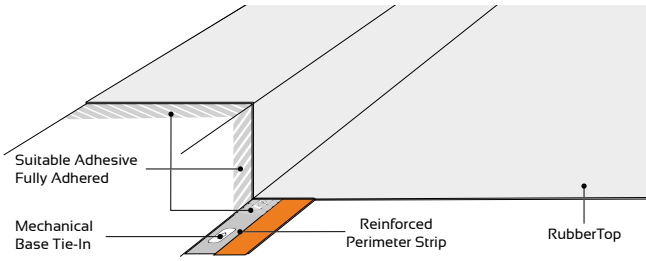
Figure 42



8.1.2. Upstand With A Reinforced Perimeter Strip

The horizontal surface is installed according to the instructions. A mechanical base tie-in is foreseen in horizontal or vertical substrate by using a Reinforced Perimeter Strip (chapter 7). RubberTop is fully adhered on the upstand with Contact Adhesive 5000, Spraybond E245 or Spray Contact Adhesive P125. Firmly roll the upstand with a pressure roller.

Figure 43



8.2 Upstand With A Base Tie-In Strip

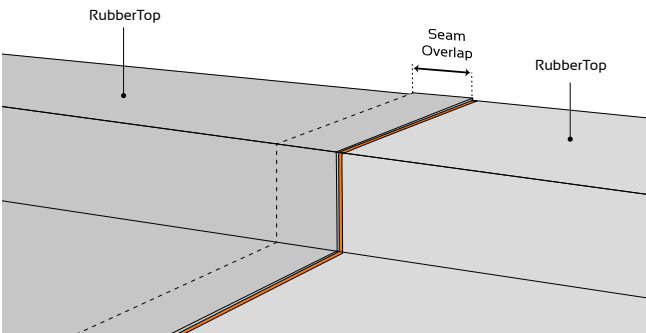
The horizontal surface is installed according to the instructions. A mechanical base tie-in is foreseen in the vertical substrate by using a Base Tie-In Strip (chapter 7). RubberTop is fully adhered on the upstand with Contact Adhesive 5000, Ecobond V, Spraybond E245 or Spray Contact Adhesive P125. Firmly roll the upstand with a pressure roller.

See figures 38 - 39.

8.3 Upstand With Adhered Base Tie-In

In few cases it is allowed to install RubberTop with an adhered base tie-in. When overlap splices pass the roof angle an additional safety patch has to be applied (see chapter 5). It is very important that there is no tension at all in the corner when splicing the membrane. Please consult chapter 7 for more information about base tie-in. On the vertical surface RubberTop is always fully adhered with Contact Adhesive 5000, Ecobond V, Spraybond E245 or Spray Contact Adhesive P125. Once splicing is finished apply an additional corner patch for securing the RubberTop splice.

Figure 44



9 Internal Corners

General Instructions

The design of corners with RubberTop is depending on several parameters:

- Fixation method
- Upstand and base tie-in design

Important rules to be followed at all times:

- The membrane shall be 100% clean, if not use Cleaning Wash 9700.
- Follow all splicing instructions.
- All layers around the corner are properly fixed and adhered.
- Tension in the underlying layers is not allowed at all.

i Note: In this chapter drawings are not foreseen with any base tie-in design. All instructions according to base tie-in have to be followed (chapter 7).

9.1 Internal Corners With Mechanically Fastened Base Tie-In

9.1.1. Flashing Tape Splicing Technique

1. Cut a strip of RubberTop EPDM as shown in the next figure. Fully adhere to the substrate. Keep the splicing areas free of adhesive and clean with Cleaning Wash 9700 when needed. The overlap for splicing with the roof membrane is at least 80 mm. The total overlap depends on the base tie-in design. Make the horizontal seam. Continue in the same way with the adjoining EPDM strip.

Figure 45

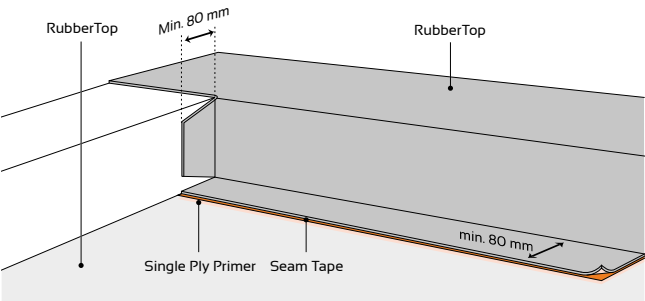
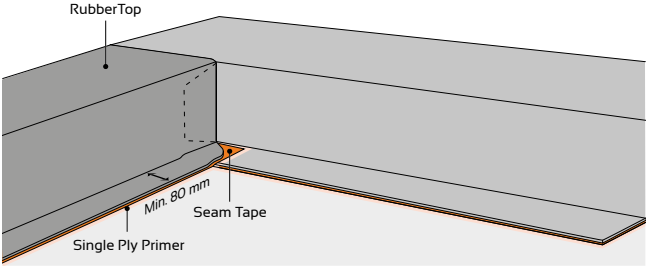
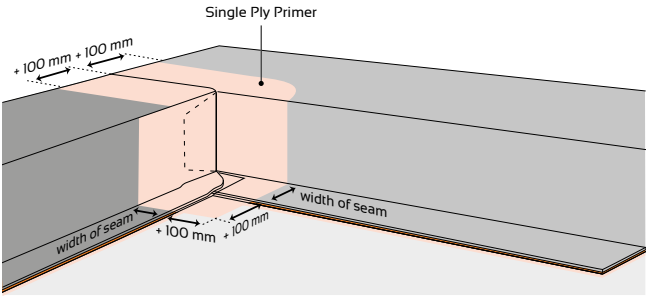


Figure 46



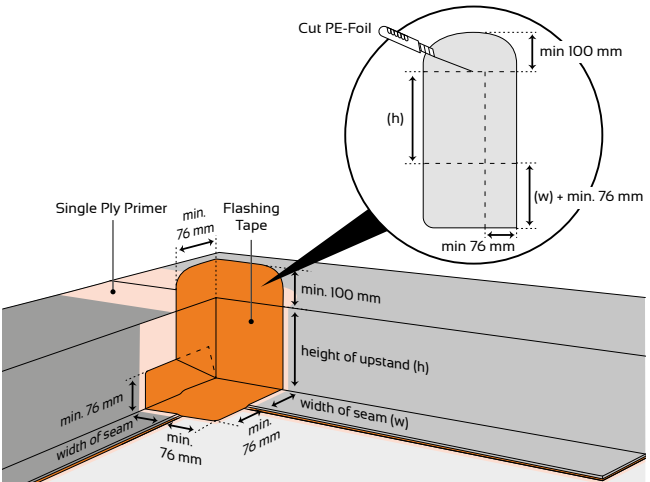
2. Apply Single Ply Primer on the area as instructed.

Figure 47



3. Prepare a piece of Flashing Tape that can be folded in the corner as shown in next figure. To ease installation we recommend to cut the release foil as shown. Do not cut into the Flashing Tape.

Figure 48



- Follow the next steps for adhering the Flashing Tape, step by step. Do not forget to apply Single Ply Primer, respect open time and press piece by piece with a 40 mm silicon and a brass roller. Evenly distribute stresses while stretching the Flashing Tape.

i Note: Do not overstretch! The pattern in the Flashing Tape should remain visible.

Figure 49

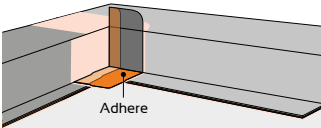


Figure 50

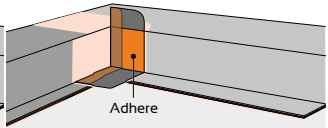


Figure 51

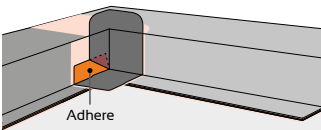


Figure 52

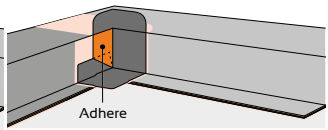


Figure 53

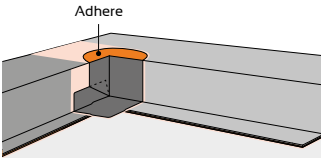
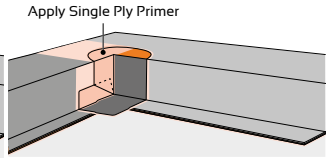
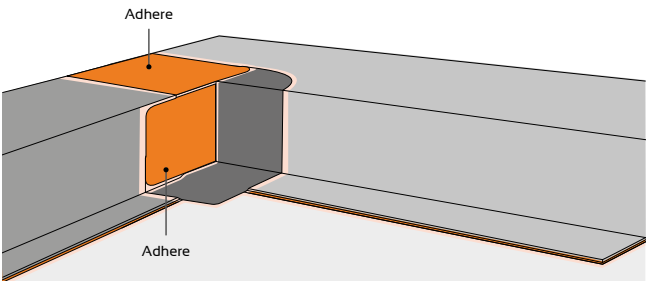


Figure 54



- Prepare two additional Flashing patches as shown on the figure below. Apply Single Ply Primer, let it flash off and adhere the remaining Flashing pieces according to the picture below. Roll firmly afterwards without enclosing air with a 40 mm wide silicon roller. Finally secure all seams with Sealant 5590.

Figure 55

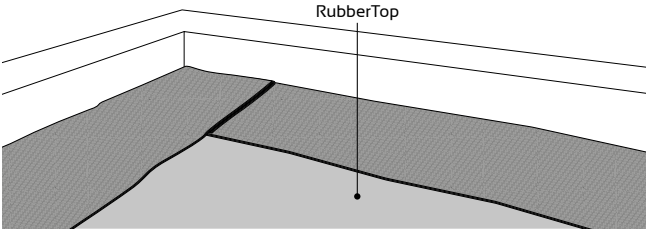


9.2 Internal Corners With Adhered Base Tie-In

In combination with an adhered base tie-in design, the RubberTop membrane can be folded according to the drawings below. It is very important that all different layers stick to each other and to the substrate and are pressure rolled.

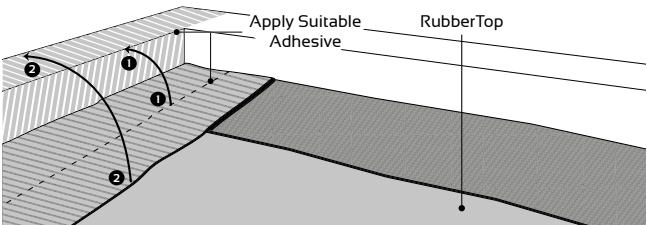
1. Fold back the membrane covering the upstands onto the horizontal roof surface as shown in the next figure.

Figure 56



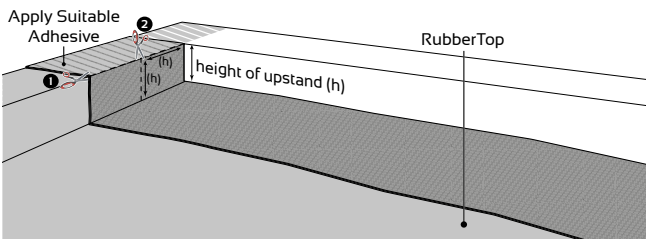
2. Apply a suitable adhesive on the surface of the upstand, roof edge and on the membrane. Adhere when flashed off.

Figure 57



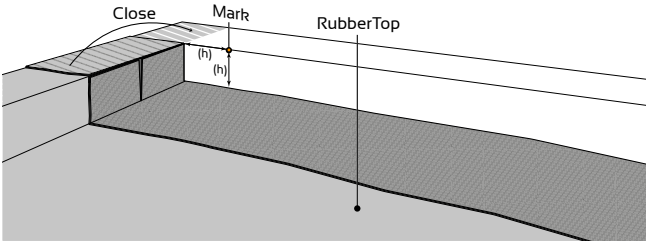
3. Measure the height of the upstand, mark the spot onto the membrane and cut the membrane as shown on the drawing below (1 + 2).

Figure 58



4. Mark the same spot onto the adjoining upstand. Adhere the horizontal piece on the parapet with a suitable adhesive.

Figure 59



5. Apply adhesive on the upstand and the back of the EPDM. Let it flash off. Adhere the internal corner to the marked point and adhere the EPDM onto the upstand towards the marked point. Subsequently adhere the remaining part of the internal corner and the horizontal piece onto the parapet. Roll all adhered pieces with a silicon pressure roller.

Figure 60

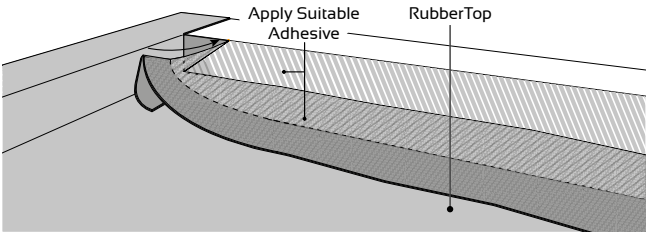
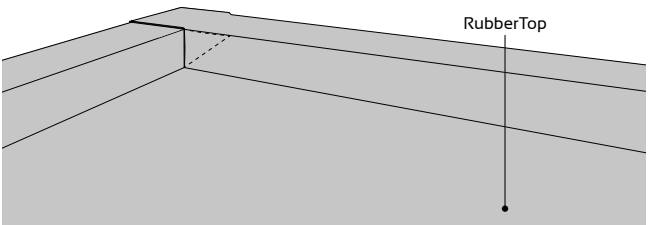


Figure 61



After folding the internal corner, seal the corner with Flashing Tape as shown below. Follow all cold splicing instructions. Secure all seams with Sealant 5590.

1. Apply Single Ply Primer and adhere a strip of Flashing Tape centered in the corner. The minimum width is 152 mm.

Figure 62

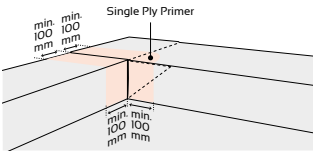
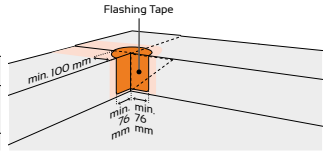


Figure 63



2. Apply Single Ply primer on top of the Flashing Tape and let it flash off. Finally install Flashing Tape on the roof edge as shown below. Secure all seams with Sealant 5590.

Figure 64

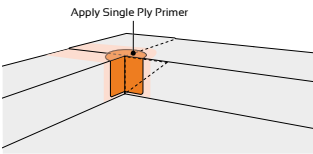
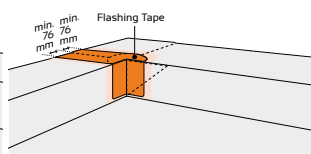


Figure 65



10 External Corners

General Instructions

The design of corners with RubberTop is depending on several parameters:

- Fixation method
- Upstand and base tie-in design

Important rules to be followed at all times:

- The membrane shall be 100% clean, if not use Cleaning Wash 9700.
- Follow all splicing instructions.
- All layers around the corner are properly fixed and adhered.
- Tension in the underlying layers is not allowed at all.

i Note: In this chapter drawings are not foreseen with any base tie-in design. All instructions according to base tie-in have to be followed (chapter 7).

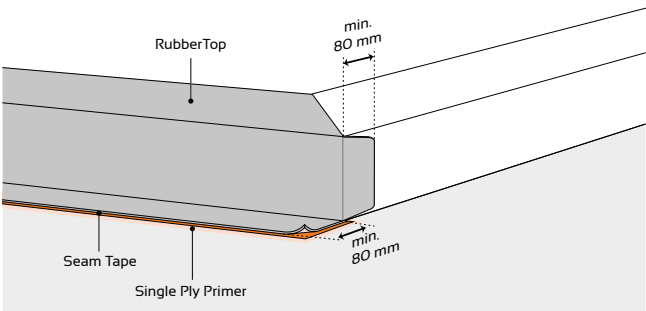
10.1 External Corners With Mechanically Fastened Base Tie-In

A separate EPDM strip to flash the upstands is used when a base tie-in is mechanically fastened. Depending on the type of the EPDM strip different techniques to flash the corner will be used.

10.1.1. Flashing Tape Splicing Technique

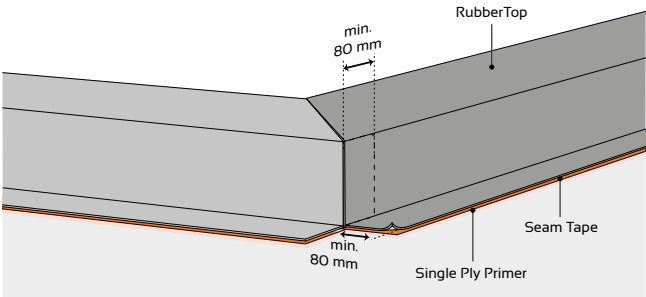
1. Cut a strip of RubberTop EPDM as shown. Adhere fully to the substrate. Keep the splicing areas free of adhesive and clean with Cleaning Wash 9700 when needed. The overlap for splicing the roof membrane is at least 80 mm. The total overlap depends on the base tie-in design. Make the horizontal seam.

Figure 66



2. Install the adjoining EPDM strip and adhere as shown below.

Figure 67

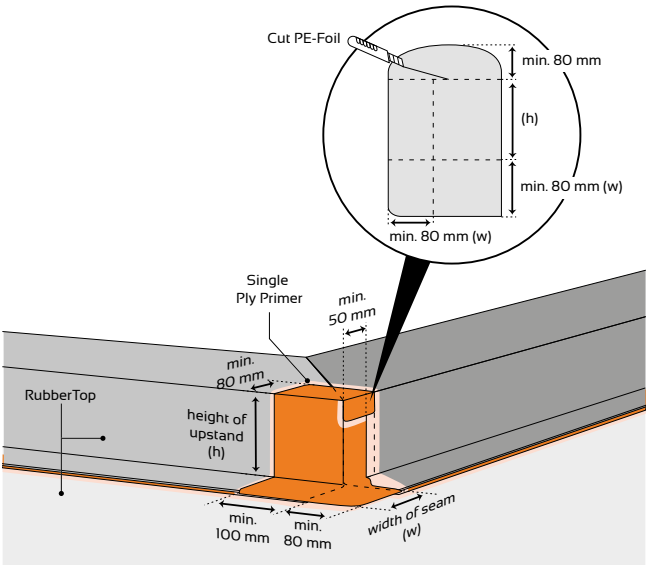


3. Prepare a Flashing Tape, cut the release foil to ease installation.

i Note: Do not cut into the Flashing Tape.

4. Apply Single Ply Primer on the substrate. When flashed off, adhere the Flashing Tape and roll with a 40 mm wide silicon roller. Overlaps of Flashing Tape should be primed. When stretching the Flashing Tape on the corner make sure to distribute the stresses equally. The pattern in the Flashing Tape should remain visible. Roll with a 40 mm wide silicon roller.

Figure 68



5. Follow the next steps for adhering the Flashing Tape, step by step. Do not forget to apply Single Ply Primer, respect open time and press piece by piece with a 40 mm silicon and a brass roller. Evenly distribute stresses while stretching the Flashing Tape.

i Note: Do not overstretch! The pattern in the Flashing Tape should remain visible.

Figure 69

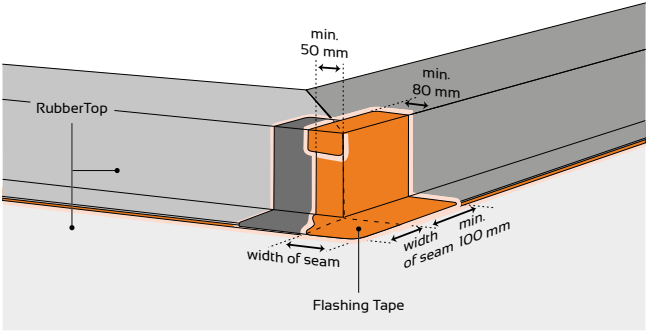
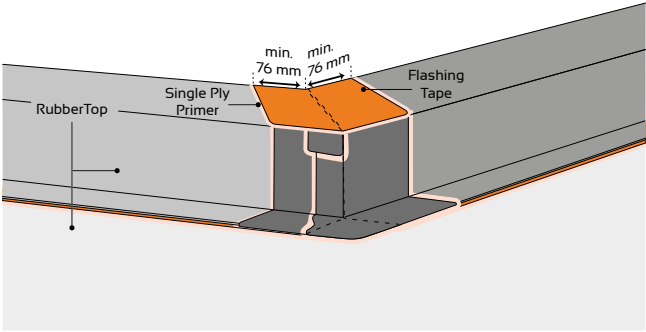


Figure 70

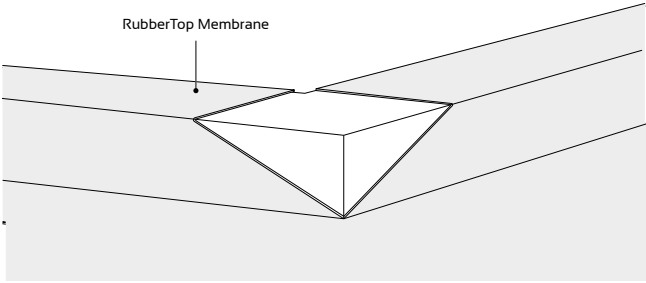


6. Finally secure all seams with Sealant 5590.

10.2 External Corners With Adhered Base Tie-In

When the base tie-in is secured with adhesives, the RubberTop membrane is cut as shown in the next figure. Both sides of the corner shall be covered, taking into account all splicing instructions. Fully adhere the membrane to the substrate without any tension in the angles.

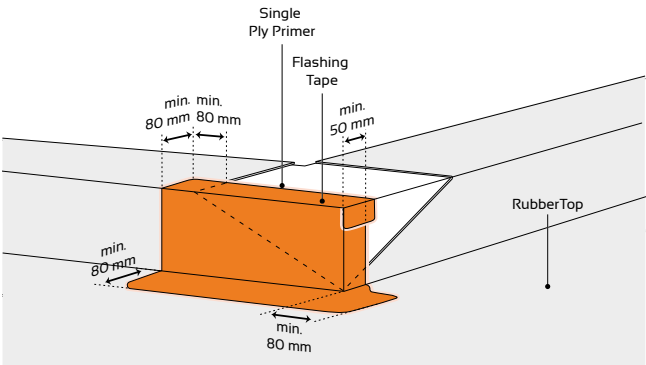
Figure 71



10.2.1. Flashing Tape Splicing Technique

1. Prepare a Flashing Tape and cut the release foil to ease installation. See figure 87.
- i** Note: do not cut into the Flashing Tape
2. Apply Single Ply Primer on the substrate. When flashed off, adhere the Flashing Tape and roll with a 40 mm wide silicon roller. Overlaps of Flashing Tape should be primed. When stretching the Flashing Tape on the corner make sure to distribute the stresses equally.

Figure 72



3. Follow the next steps for adhering the Flashing Tape, step by step. Do not forget to apply Single Ply Primer, respect open time and press piece by piece with a 40 mm silicon and a brass roller. Evenly distribute stresses while stretching the Flashing Tape.
- i** Note: Do not overstretch! The pattern in the Flashing Tape should remain visible.

Figure 73

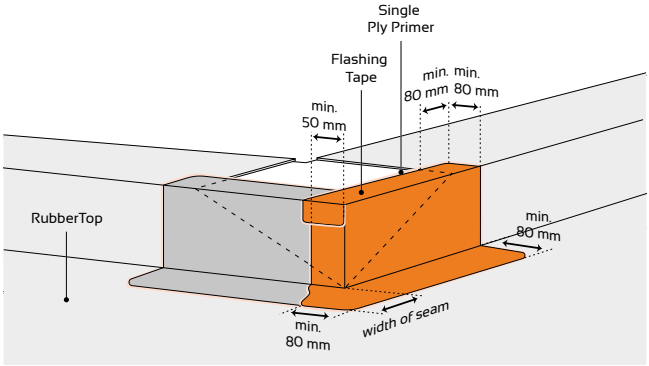
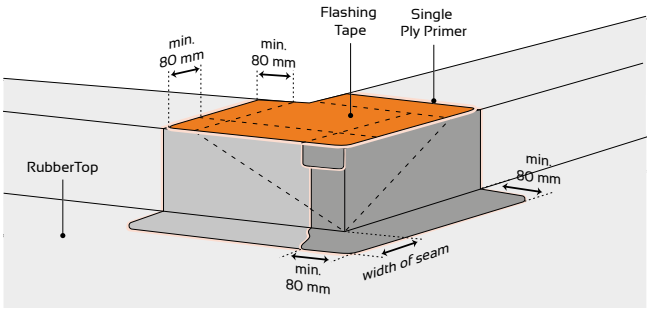


Figure 74



4. Secure all seams with Sealant 5590.

11 Drains

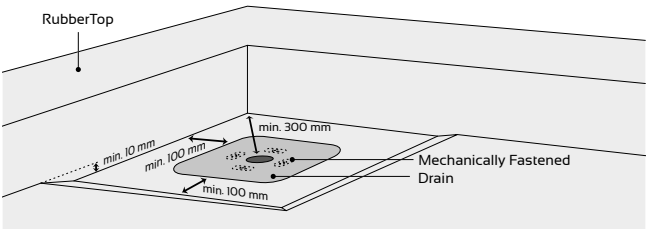
General Instructions

All water on a roof has to be drained. Do not underestimate the importance of a roof drain. Follow all national regulations at all times.

Important:

- Drains and scuppers must be firmly anchored in the substrate and must always consist of a hard material. The connection to the construction must be air and wind tight, to prevent convection and condensation. When passing a vapour barrier, do not forget to seal this connection airtight.
- The diameter of the drain/scupper is determined according to EN 12056-3. At all times, the maximum permissible water level on the roof must be taken into account. All drains must be installed with a minimum slope of 2% (horizontal drains).
- When a roof drain needs to be connected to a drain pipe, the connection shall be solid and vapour tight!
- RubberTop has to be fixed mechanically around all drains, to withstand tensions.
- When using HDPE drains with EPDM flap, only drains delivered by SealEco, with SealEco EPDM flaps shall be used. The use of other EPDM drains is not allowed.
- When using drains with a clamp ring (ex. Sita or equivalent), do follow the instructions from the producer.
- Adhesion to metal drains is preferable done with Flashing Tape.
- ❗ Note: It is very important that the metal is 100% clean! The installer will take full responsibility when using this type of drains.
- Lower the roof surface by at least 1 cm.
- To assure proper splicing, position the drain as instructed. Drains shall not be installed close to parapets, skylights or other obstacles. A minimum distance has to be kept to allow proper splicing. If this is not the case, change it.

Figure 75



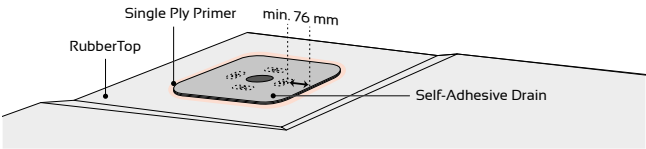
11.1 Tape Splicing Drains

SealEco provides different types of drains for seaming with cold splicing technique. Follow all splicing instructions.

Self-Adhesive HDPE Drain

Secure the horizontal roof surface with fasteners around the drain. Fix the drain solidly and air tight in the drain pipe. Splice the entire Cover Tape to the EPDM membrane following all splicing instructions. Secure all seams with Sealant 5590.

Figure 76



HDPE Drain With EPDM Flap

Fix the RubberTop membrane mechanically in the substrate with appropriate fasteners and washers. Connect the HDPE drain, water and air tight with the drainpipe. Adhere the flap with Contact Adhesive on the RubberTop membrane. Make a splice with Flashing Tape. Seal off with Sealant 5590.

Figure 77

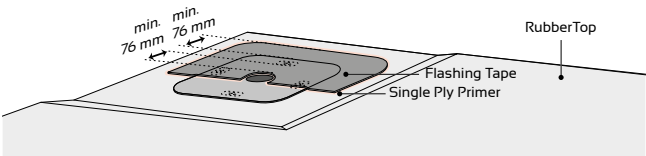
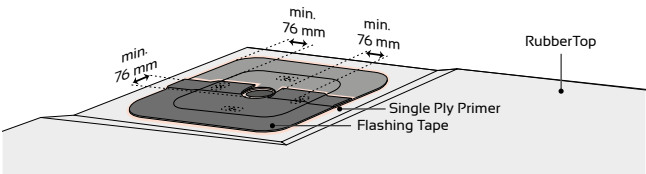


Figure 78

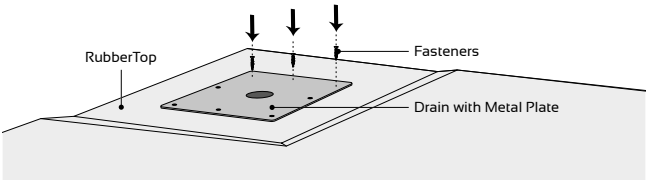


Metal Drains

Instructions:

1. Clean and degrease the metal thoroughly. Apply a bead of Sealant 5590 between the metal plate and the membrane. Apply this around the pipe and stay away for at least 50 mm from the edge of the plate.
2. Fix the metal with minimum 3 fasteners a side through the RubberTop membrane into the roof construction. The metal plate shall be installed completely flat and without sharp edges.

Figure 79



3. Make a splice with Flashing Tape and seal off with Sealant 5590.

Figure 80

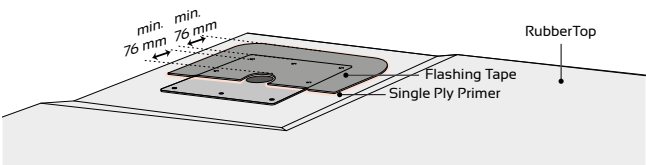
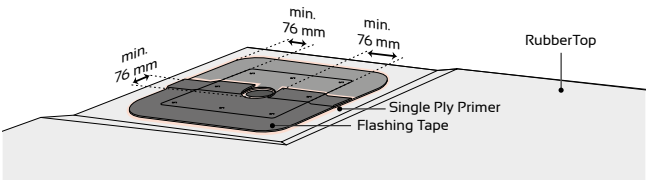


Figure 81



12 Pipe penetrations

General Instructions

- All pipes shall be properly fixed in the substrate. Moving pipes might fatigue the Flashing Tape and cause cracking.
- When passing a vapour barrier, a vapour tight connection between the vapour barrier and the pipe is to be established to prevent convection and condensation.
- The maximum contact temperature of the pipe shall not exceed 80°C.
- When pipes are installed after installation of the RubberTop membrane, the pipe has to be fastened mechanically through the membrane using an appropriate base plate.
- Fix the RubberTop membrane according to the instructions. In case of adhered and ballasted roof build-ups the membrane has to be fully adhered or mechanically fastened around the pipe penetrations. (see chapter: 'Base Tie-In')
- The pipes shall be smooth and clean, especially when adhesion has to be foreseen. Rusty surfaces have to be treated properly.
- The height of the EPDM strip on the pipe will be at least 150 mm above the final roof level.
- The minimum distance from a pipe to a parapet, skylight, corner, drain or other pipe is 300 mm. If this is not the case we advise you to move the pipe. Proper splicing can't be guaranteed!
- Never allow ponding water around a pipe penetration.
- A stainless pipe clamp has to be used at all times. Seal with Sealant 5590.

12.1 Flashing Tape Pipe Boot

There are two different ways of applying a Flashing Tape around a pipe. This depends on the external diameter of the pipe. It is not allowed to use these techniques for flexible pipe penetrations, cables and pipes with a diameter < 40 mm. Follow all cold splicing instructions.

Small Pipes:

1. Prepare 2 identical Flashing pieces. Apply Single Ply Primer onto the surfaces. When flashed of install both Flashing pieces onto the RubberTop membrane and ensure an overlap of min. 25 mm on the pipe. Roll the pieces firmly with a 40 mm wide silicone handroller and a brass corner roller. Avoid overstretching.

Figure 82

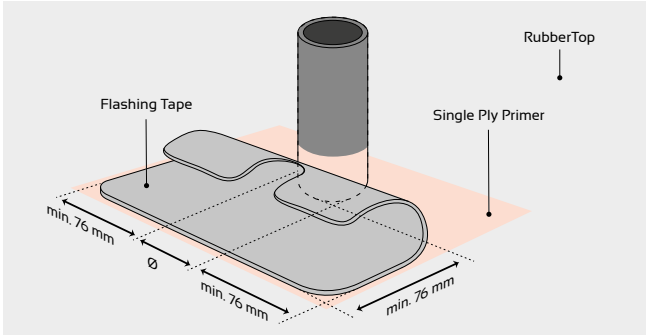
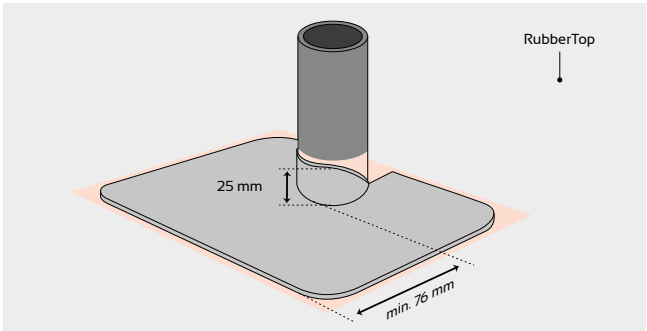
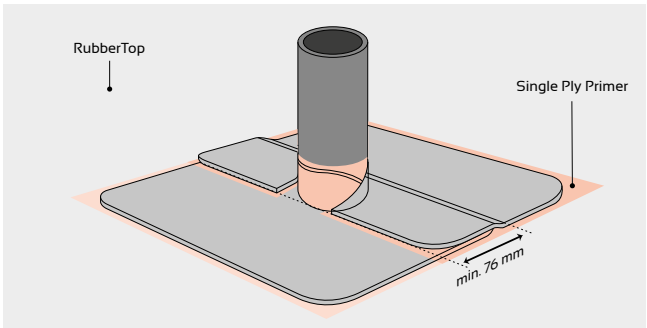


Figure 83



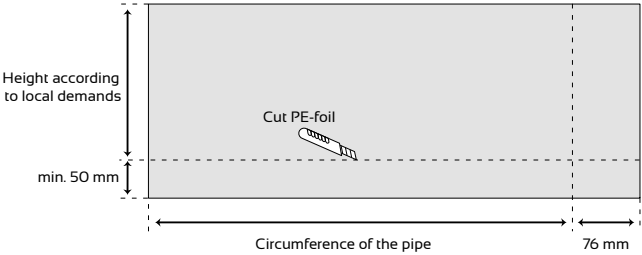
2. Make an overlap of minimum 76 mm. Apply Single Ply Primer. Let it flash off. Install the Flashing piece as shown in the next figure.

Figure 84



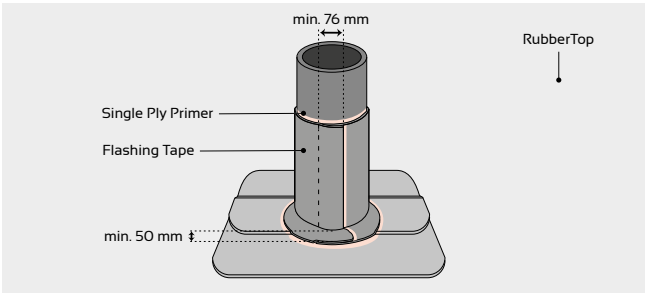
3. Apply Single Ply Primer onto the tube and the base Flashing. Cut a Flashing piece with following measurements:
 - Length = the circumference of the tube and add 76 mm.
 - Width = the height of the tube (min. 150 mm) and add 50 mm for adhering onto the base flashing.
4. Cut the PE protection foil at the base so the 50 mm zone can be fold back easily.

Figure 85



5. First adhere the flashing piece against the tube. Use your fingers to gradually adhere the flashing onto the base. Stretch the Flashing Tape towards the outside edge. Do not forget to prime the overlap before splicing. Secure all seams with Sealant 5590.

Figure 86



Big pipes:

1. Apply Single Ply Primer on the pipe and EPDM substrate to be covered.
2. Cut a piece with a length = circumference + 76 mm. Width = horizontal part to be covered + 25 mm.
3. When the primer is flashed off install the Flashing without overstretching. Spread the stresses equally. Before splicing the overlap, apply Single Ply Primer and wait until flashed off. Roll firmly, don't enclose air.

Figure 87

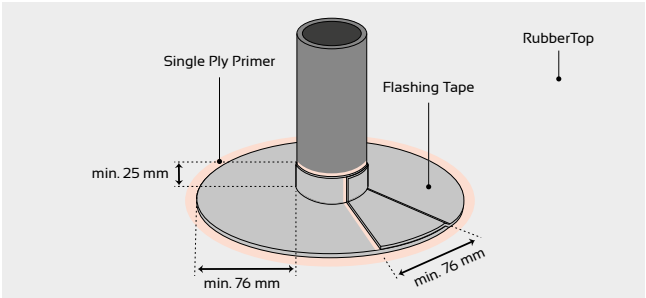
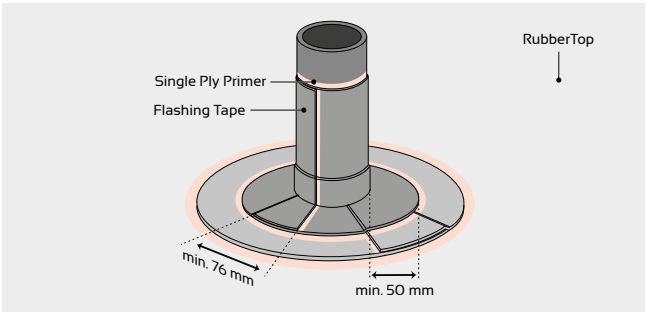


Figure 88



13 Roof Edge Details

General Instructions

In this chapter a few possible designs for termination of roof edges are shown. It is important to follow all local requirements.

Because of the complexity of drawings we sometimes omitted the different possibilities of base tie-in designs. It does not mean that they should be followed, on the contrary. Only the basic rules are shown.

Detail designs:

- Connections To Walls
- Roof Edge Terminations
- Connections To Gutter
- Expansion Joints
- Green Roof Edge Detail

i Note: At all times RubberTop needs to be fixed mechanically at all roof edges. Membrane edges should be protected at all times! Non reinforced membranes (f.e. RubberTop) always have to be fastened linear at a roof edge.

i Many details are sealed with Sealant 5590. These connections have to be checked at least twice a year and are not covered by any product guarantee because SealEco has neither control on the different substrates, neither on the application. It is the responsibility of the building owner to check these connections. We recommend that a maintenance contract is concluded between roofer and building owner to cover these risks.

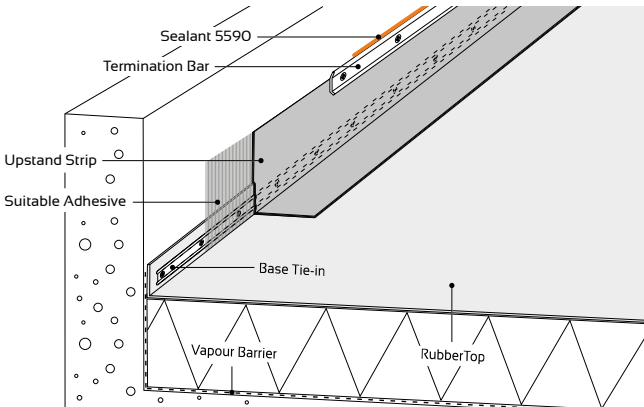
Contact our Technical Department for more information.

13.1 Connections To Walls

Termination Bar

The use of a termination bar is allowed for ending RubberTop against a wall, only when there is no risk that water can penetrate behind the profile.

Figure 89

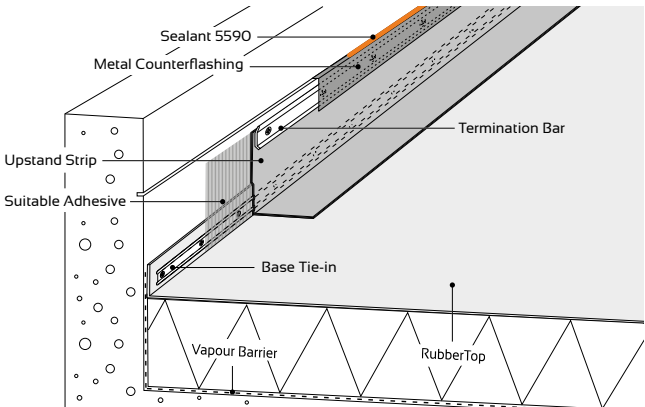


1. Cut the membrane in a straight line at the desired height. Adhere the membrane to the substrate as explained before. Fix the termination bar with appropriate fasteners foreseen with watertight washers to prevent capillarity. The distance in between the fasteners is maximum 200 mm and will be decreased when compression of the membrane is insufficient. Each profile shall be fastened at 25 mm from the end. Wall profiles shall never be bended around a corner. Always cut the profile. Two adjoining profiles will be spaced of 2 mm/m.
 2. Seal the profile with Sealant 5590. The sealant will adhere at least 10 mm on the profile and 15 mm on the wall. Smoothen the sealant under an angle of 45°.
 3. In case of vertical fixation to a wall, the profile has to be sealed at both sides.
- i** Note: Never install profiles on top of existing waterproofing membranes, f.e. in case of renovations. Termination bars can only be used for connections to walls, concrete, etc.

Counterflashing

A termination profile will cause leakage in case of porous substrates, f.e. masonry, bricks, etc. A metal counterflashing shall be used like f.e. RubberTop Flex. Cut chase into the wall a minimum of 25 mm depth, at the height required. This should be done prior to installing the RubberTop EPDM membrane. Remove all dust to assure proper adhesion. Adhere the membrane to the substrate. Fasten the membrane with a termination bar at least every 200 mm. Insert the counterflashing in the wall at least 25 mm. Fix with appropriate fasteners and seal with Sealant 5590 along the edge of the counterflashing.

Figure 90



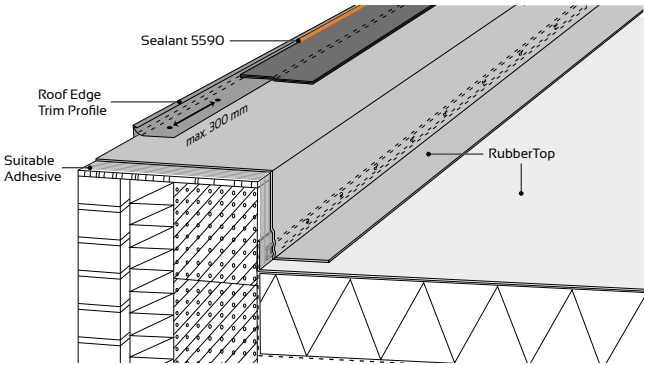
13.2 Roof Edge Terminations

Roof Edge Trim Profiles

Standard roof edge trims are available in aluminum and polyester. Follow these steps:

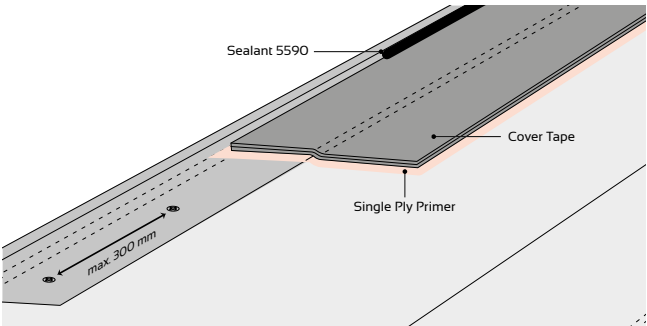
1. Adhere the RubberTop membrane as shown in the drawing. Fix the roof edge profile through the EPDM membrane at least every 300 mm. In case of high wind load, and unequal compression of the membrane, provide more fasteners. The building engineer can provide you more information about wind load demands. Each profile shall be fastened at 25 mm from its end. Use corner pieces and never bend the profile around a corner. Two adjoining profiles will be spaced of 2 mm/m. Use proper connection pieces to align different profiles.

Figure 91



2. Once the profiles are fixed, clean the profile and the EPDM with Cleaning Wash 9700.
3. Depending on your splicing method you can continue with a Thermobond R Splice Strip or a Cover Tape. Do not use Flashing Tape for this application.

Figure 92



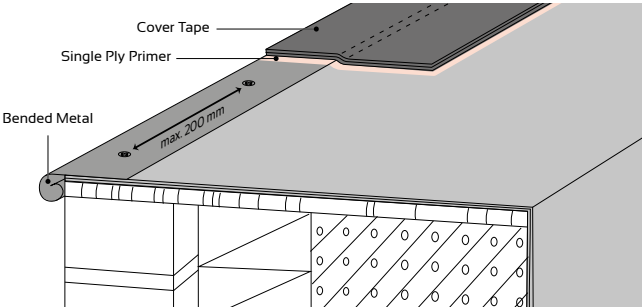
4. Apply Sealant 5590 as shown.
- i** Note: Detailed instructions for splicing can be found in chapter 5. Always perform an adhesion test, in particular when using PTFE coated trims. Because of continuous changes and variety of coatings used for profiles, it is impossible for SealEco to guarantee the adhesion on them. This is the responsibility of the roofer.

Bended Metal Roof Edge Termination

In several countries bended metals are used for aesthetical solutions, fitting the building concept. When using zinc (treated in different ways), red copper, stainless steel, aluminum, etc, the metal plates are either welded to each other or just overlapping. Ask your supplier how to prevent capillarity when overlapping metal plates. Because

of thermal expansion there are different ways to fix the plates. The EPDM membrane however should be fixed with fasteners at least every 200 mm. Connection between the metal and the EPDM is assured with a Cover Tape. Apply Single Ply Primer, and Flashing Tape as explained in chapter 5 - splicing instructions.

Figure 93



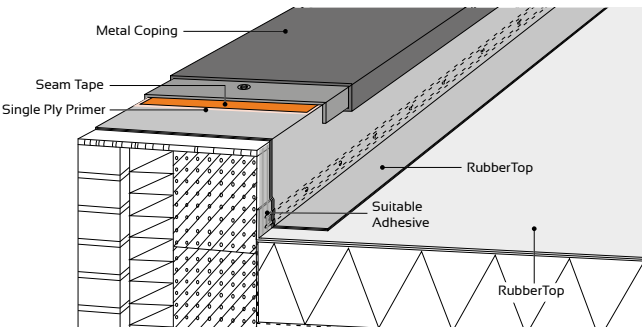
Metal Coping

A lot of different systems are available on the market. Always take following instructions into consideration:

The RubberTop membrane is fully adhered until the outside of the wall. Fix the membrane every 200 mm with appropriate fasteners, or clamps. Put a Seam Tape between the clamp and the membrane before tightening the fasteners. Most of the time the number of fixations of the copings is insufficient for fixation of the membrane. Add washers and fasteners in between them.

i Note: Check that joints between copings are properly secured

Figure 94

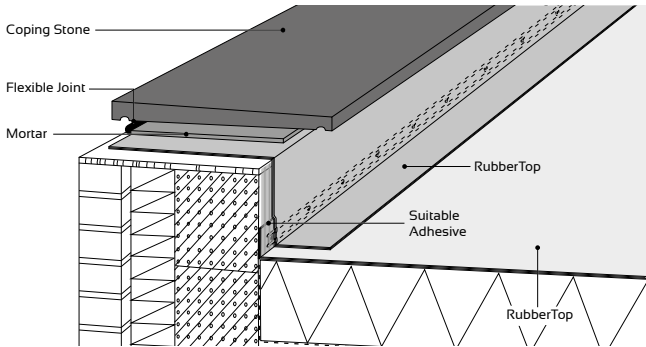


Coping Stone

Install the EPDM membrane across the top of the wall, 50 mm short of the outside face. Fully adhere the EPDM as described before. Lay the mortar bed from the rubber across to the outer brick wall to form a solid bed. Finally lay coping stones ensuring that they give suitable coverage over the wall. A flexible joint between the façade and the copingstone has to be made with appropriate sealant.

i Note: Use only coping stones with dripping edges

Figure 95



13.3 Connections To Gutters

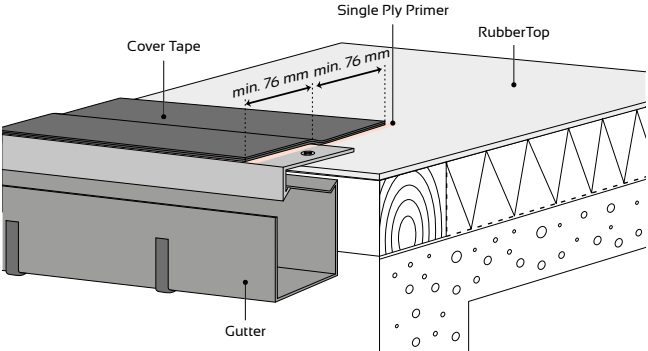
At all times, the EPDM membrane has to be cut when water runs from a roof into a gutter. The solutions below show the principle. Avoid ponding water by respecting the advised roof slope of 2°.

External Gutter With A Cover Tape

Fully adhere the EPDM membrane at the roofend. Fix the bended metal plate through the EPDM membrane at least every 200 mm. Connect the metal plates, as prescribed by the producer. Clean the metal with Cleaning Wash 9700. Apply Single Ply Primer and Cover Tape.

All T-splices have to be sealed with Flashing Tape. Secure with Sealant 5590. Detailed instructions for splicing can be found in chapter 5.

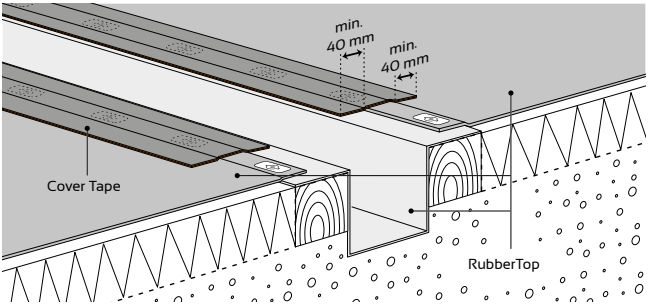
Figure 96



Wooden, Concrete Gutters With Thermobond

First adhere a separate RubberTop EPDM membrane in the gutter up to min. 150 mm on the horizontal roof surface. Install the RubberTop roof membrane with an overlap of at least the width of the washer + 20 mm. Fasten both membranes at the same time every 200 mm. Splice the seam with a Cover Tape as explained in chapter 5.

Figure 97



13.4 Expansion Joints

The design of expansion joints with RubberTop membranes depends on the size and the location. The size, the place and the number will be calculated by building engineer. We show only a few possible ways to handle this roofing detail.

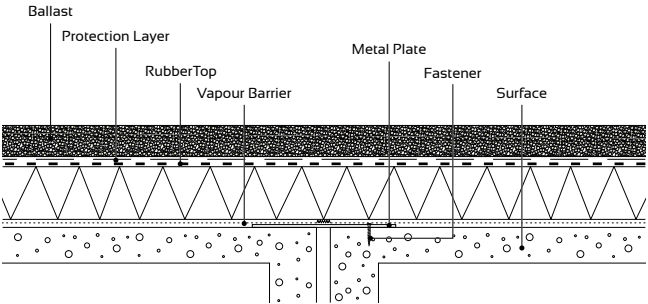
Thanks to the properties of EPDM dealing with expansion joints are rather simple. EPDM has extremely good elasticity and ageing properties. Fatigue tests prove that EPDM has unique properties to cope with non-stop tensions around expansion joints. However do never stress the membrane more than 25%.

We make a distinction between loose laid and adhered or mechanically fixed membranes.

Loose Laid / Ballasted Roofs

When using RubberTop as a ballasted roofing system, mostly also the insulation will be loose laid. In that case just fix a galvanized, coated or stainless steel metal plate in the substrate. The plate is fully covering the expansion joint and is properly fixed in the construction. Vapour barrier needs to be fixed as prescribed by the producer, engineer, or according to local regulations.

Figure 98

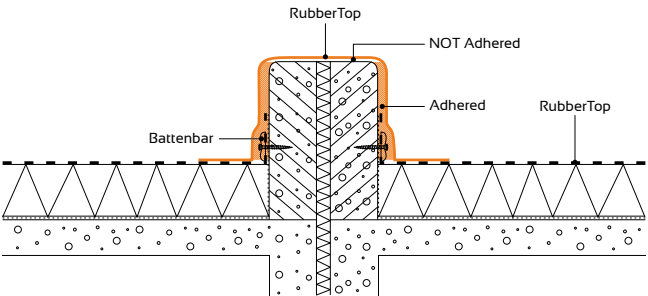


Adhered and Mechanically Fastened Roofs

When RubberTop is adhered or fixed mechanically, stresses should be handled locally, without putting any additional load on the fixation of the membrane.

A solution is the use of a separate upstand with a RubberTop membrane. Follow all splicing instructions explained in chapter 5. For more solutions, contact our technical department.

Figure 99

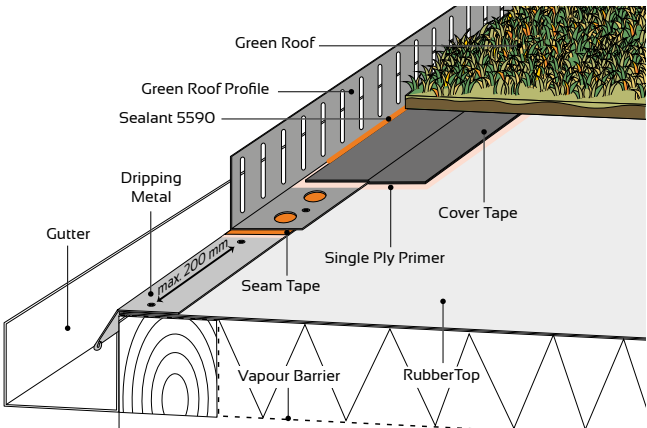


13.5 Green Roof Edge Detail

Use this principle for all roof edge solutions where water has to run into a gutter:

- Fix a metal bended profile, through the RubberTop membrane. (see chapter – gutters)
- Clean the metal plate and adhere a Seam Tape on the dripping plate.
- Install the green roof edge profile onto the tape and fasten at least every 200 mm in the substrate through the EPDM membrane. The tape should be equally compressed over the entire length. The connections between dripping plates and those of the green roof edge profile should be distanced at least 200 mm.
- Seal the RubberTop to the profile with cold Tape splicing technique. Degrease the profile with Cleaning Wash 9700 prior to splicing. Apply Single Ply Primer and use a Cover Tape of at least 152 mm.
- Apply Sealant 5590.

Figure 100



14 Supervision And Maintenance

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

The supervision and maintenance of a roof is the responsibility of the building owner. Experience however learned us, that in most cases they only inspect a roof when irregularities are discovered, leakage, clogged drains,...

Therefore we recommend that the roof is inspected by an authorized roofer on a regular base, at least two times per year and additionally 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.

Check all sealants, because they don't fall under the product guarantee of the roofing system!

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.

RubberTop 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 5cm on the roof surface to make sure that the membrane isn't damaged by the work.

Green roofs need extra care. A maintenance contract or service agreement is highly recommended. Advice the green roof supplier on the use of fertilizers.

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 RubberTop membrane.

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 facade?
- 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 has well developed techniques for finding leakages and can assist when the origin of the leakage is hard to find.



We make
waterproofing
easy

Your RubberTop dealer:

For more information, visit www.SealEco.com