APPLICATION MANUAL
Sikaplan® G TYPES

BUILDING TRUST

CONTENT

1 INTRODUCTION

Sika Roofing is a world leader in polymeric waterproofing membranes and system solutions with more than 50 years of experience. Superior installation quality is vital to the long life of a roofing system. In order to ensure a high-quality roofing job, hands-on and theoretical training is required.

Therefore Sika Roofing puts great emphasis on application training and offers a wide range of expert training courses.
Only those who have successfully completed one of the Sika Roofing training courses and have regular, practical site experience may install Sika Roofing systems.

Watertight Seams
The intent of this application manual is to supplement the knowledge acquired during an application training course and to serve as an on-site reference.
The integrity of the waterproofing should be ensured by systematically following the procedures in the application manual.

The information contained in this application manual is true and accurate to the best of the company's knowledge and represents state of the art at the publication date. All recommendations conform with Sika installation instructions. They have been developed through more than 50 years of practical experience. Parts of our application manual are the recommendations of the national regulation; in case of any contradiction, Sika installation instructions apply.

This application manual is valid for the installation of Sikaplan® G, Sikaplan® VG, Sikaplan® VGT, Sikaplan® VGW and Sikaplan® VGWT membranes.

Unless otherwise stated in this manual, the term «Sikaplan® G» refers to all five types of Sikaplan® membranes.

This application manual does not offer planning assistance!

You must always respect the Sika installation instructions for the roofing system being installed.

To prevent accidents, always follow the safety precautions.

2 GENERAL APPLICATION INFORMATION

Basic Construction and Substrates
The roof structure is designed to meet relevant standards and general guidelines. Make sure it is of sufficient strength. When working on the roof, distribute loads to avoid concentrated loads that could cause excessive deflection. Prevent ponding of water. The substrate has to be clean, dry and smooth. Sharp edges, concrete burrs, uneven planking and element edges can damage roofing sheets. Cover them with thermally bonded drill-proof polyester or polypropylene fleece (S-Felt) of at least 300 g/m².

Expansion Joints
Keep in mind that significant movement at expansion joints can damage Sikaplan® G membranes. Appropriate details at these joints must be executed.

Electricity
Ensure an uninterrupted power supply for your installation tools (welders, drills, etc.), as current variations disturb the turning moment (torque) of your drilling machine. Current variations also negatively affect your welding machine, causing seams to be welded irregularly.

STORAGE OF Sikaplan® G MEMBRANES

On the building site Sikaplan® G membranes must be stored in cool and dry conditions and must be protected against all weather influences.

Always cover opened pallets with the delivered protection cover.

Always store single rolls on pallets or elevated flat bases.

Adhesive, cleaner etc. can be stored in the same place.

COMPATIBILITY OF Sikaplan® G MEMBRANES

Sikaplan® G membranes are not resistant to bitumen, tar, oil or solvents.

Always lay a separation layer between the membrane and bituminous materials.

Remove any contamination immediately.

Install separation layers also over any substrates that contain or are impregnated with bitumen. A separation layer is also required over certain insulation materials

Attention:
Never leave a solvent-soaked cloth on Sikaplan® G membrane.

MACHINES AND TOOLS

Machines and Tools for Hand Welding

- Hand-held welder Leister Triac AT/ST with
  - 40 mm nozzle
  - 30 mm nozzle
  - 20 mm nozzle straight type
  - 20 mm nozzle angular type
- Silicon pressure roller
- 5 mm brass pressure roller
- Screwdriver no. 5
- Empty containers and white cotton cloth
- Wire brush

Tools for Cutting and Marking Roofing Sheets

- Metric rule
- Scissors
- Hooked knife
- Plain cutter
- Snap line with colored chalk
- Marking chalk / marking pen
- Ball-point pen

Tools for Cutting and Installing Metal Sheets

- Sheet-metal shears
- Seam pincers
- Screwdriver
- Hammer
- Pliers

Auxiliaries and Tools for Water Removal and Seam Cleaning

- Empty containers and white cloths
- Sika-Trocal® Cleaner 2000 or Sika-Trocal® Cleaner L 100
- Rubber slide

Have enough empty containers ready for cleaner, solvent-soaked cloth, adhesives, etc. Only use absorbent cloth.

Material and Tools for Sealing

- Sealant Gun with Sikaflex® 11 FC sealant cartridge
- Sika® Primer-3 N
- Brush

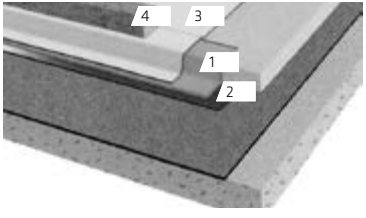
Tools and Auxiliaries for Adhesive Work at Penetrations and upstands

- Closable solvent-resistant container for adhesive
- Solvent-resistant skin roller
- Sika-Trocal® C 733 adhesive
- Sika-Trocal® CV 733 thinner
- Brush

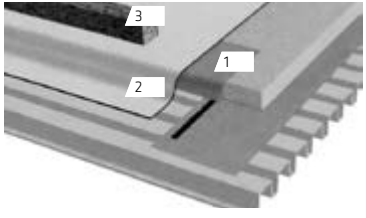
DAY JOINTS

Day joints protect flat roofs against water penetration when work is interrupted.

To protect applied insulation material against rain, we recommend making a partition with bulkheads.



Day Joints on Bitumen Vapor Barriers
Adhere a strip of Sikaplan® WP 6110-15 H black (1) or Sarnafil® G 465-15 (1) as protection on the bitumen vapor barrier (2). Lay Sikaplan® G membrane (3) on this protection strip and put ballast (4) on it.



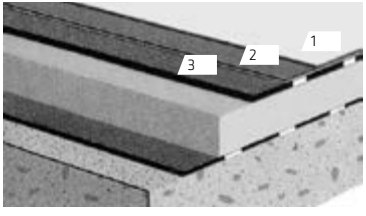
Day Joints on PE Vapor Control Layer
Pull up the vapor control layer (1) and lay it on the insulation material. Pull Sikaplan® G membrane (2) over the edge of the PE vapor control layer and put ballast (3) on it.

3 APPLICATION INSTRUCTIONS

SEPARATION AND LEVELLING LAYERS

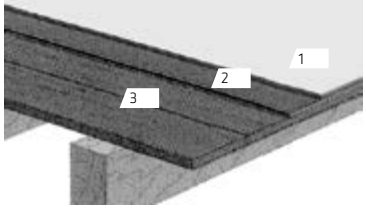
Some substrates require special separation layers.

Seams in separation layers must overlap at least by 100 mm.



On Bitumen
Old and new bituminous membranes must always be covered with a separation layer.

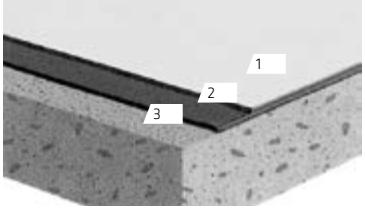
Legend:
1 Sikaplan® G membrane
2 Separation Layer S-Felt T 300
3 Bituminous membrane



On Timber
A separation layer is necessary to prevent reaction between Sikaplan® G membrane and wood impregnation.

Legend:
1 Sikaplan® G membrane
2 Separation Layer S-Felt T 300
3 Timber

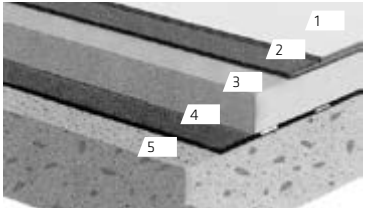
SEPARATION AND LEVELLING LAYERS



On Concrete
Always put a levelling layer between Sikaplan® G membrane and concrete, concrete elements or aerated concrete elements.

Seams in levelling layers must overlap at least by 100 mm.

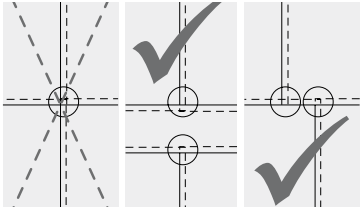
Legend:
1 Sikaplan® G membrane
2 Levelling Layer S-Felt A 300
3 Concrete



On Thermal Insulation
For fire protection put a separation/fire protection layer between Sikaplan® G membrane and thermal insulation (e.g. polystyrene).

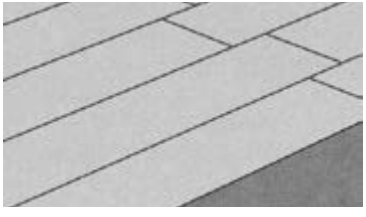
Legend:
1 Sikaplan® G membrane
2 Separation/Fire Protection Layer S-Glass Fleece 120
3 Thermal Insulation
4 Vapor Barrier
5 Concrete

Always check the compatibility of Sikaplan® G membrane with the thermal insulation.

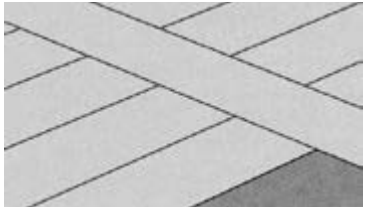


Avoid Cross Joints (double T-joints)

Transverse Joints
By proper arrangement of Sikaplan® G membranes seams can be limited to straight welded seams and transverse joints (= T-joints).



Stagger at sheet ends to avoid cross joints.



To avoid cross joints on large roof surfaces, lay out a transversal roofing sheet of maximum 1000 mm width.

SEAM CLEANING

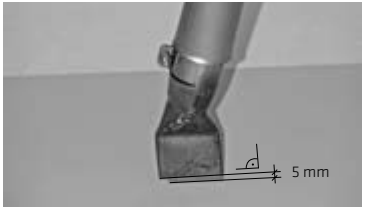
Sikaplan® G membranes must be clean for welding.

- Remove dust, fibers of insulation material and dirt with a moist cloth.

- Remove bitumen contamination, oil, adhesive and sealant with Sika-Trocal® Cleaner 2000 or Sika-Trocal® Cleaner L 100.

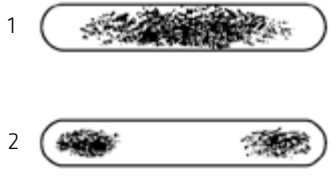
- Start welding when seams are dry and the fluid has evaporated completely.

HAND WELDING



Control of Hand-held Welder
A properly working hand-held welder is the basis for a secure water-tight seam.
Check your hand-held welder regularly.

Airflow Test
- Heat your hand-held welder to working temperature (approx. 480 °C) for about three minutes.
- Hold the nozzle parallel to the Sikaplan® G membrane. Holding the nozzle about 5 mm from the sheet, heat the membrane.
- Check the melting picture.



Melting Picture:
1 Correct
2 Incorrect
Reasons:
- Obstructed or clogged nozzle
- Insufficient air supply
- Defective heating element

Corrective Measures:
- Regular cleaning of nozzle
- Regular cleaning of filter

HAND WELDING

General
Set the temperature of the hand-held welder correctly by carrying out one or more test welds prior to welding.

The correct welding temperature depends on:
- Working speed
- Air supply volume (size and type of nozzle)
- Ambient air temperature and humidity
- Material temperature and moistness

Recommended settings for fresh supplied Sikaplan® G Membranes

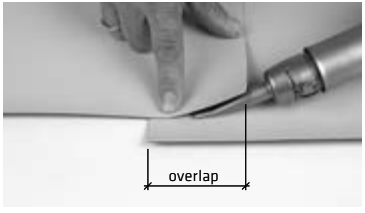
Hand Welder Leister	Nozzle 20 mm	Nozzle 40 mm
	450 - 520 °C (on setting scale)	450 - 520 °C (on setting scale)

Selection of Nozzle

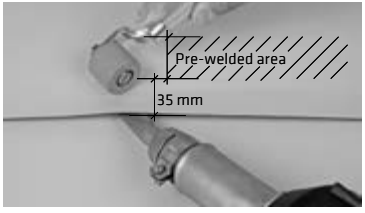
Hand Welding Sikaplan® G Membranes
- Use a 30 mm or 40 mm nozzle for straight welds.

Hand Welding at Details
- Use a 20 mm nozzle for details.

HAND WELDING



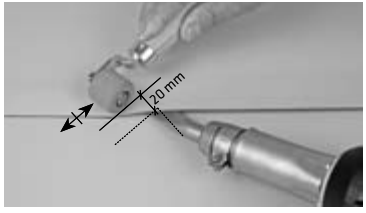
Hand welding procedure
When welding Sikaplan® G membranes, the overlap area must be clean and dry.
Required membrane overlap is:
- 100 mm for using standard fasteners/ washer
- 120 mm for using standard fasteners/ tubes



Hand welding is carried out in three steps:

1. Spot weld the overlap

2. Pre-weld
Weld the rear overlap area so that a 35 mm opening (when using 40 mm nozzle) remains for the final weld.



3. Final weld
Weld the 35 mm opening area. Guide the pressure roller at a distance of 20 mm parallel to the air outlet of the welding nozzle. Roll the pressure roller fully across the seam.

Attention:
- Ensure sufficient pressure during welding.
- To form seams without folds, only press from the back to the front of the seam edge.
- Always perform a test weld before welding seams.
- Check seams during and after welding.

Automatic Welding
When welding Sikaplan® G membranes, the overlap area must be clean and dry.
Required membrane overlap is:
- 100 mm for using standard fasteners/ washer
- 120 mm for using standard fasteners/ tubes

Always perform a test weld before welding seams. Check seams during and after welding.

Leister Varimat V2
Use nozzle of at least 30 mm.

Mount additional weight of approx. 5 kg (1) onto the automatic welding machine. Determine the additional weight by inspecting the test weld.

Check the settings of the automatic welding machine by carrying out a test weld and adjust the settings if necessary.

Check seams during and after welding.

Sarnamatic® 681:
The Sarnamatic® welding machine is delivered with a comprehensive instruction manual.

Check the settings of the automatic welding machine by carrying out a test weld and adjust the settings if necessary.

Check seams during and after welding.

AUTOMATIC WELDING

General
Always perform a test weld to check the basic machine settings. Adjust the basic settings as required.

The correct welding temperature depends on:
- Welding speed
- Air supply volume (size and type of nozzle)
- Ambient air temperature and humidity
- Material temperature and moistness

Recommended settings for fresh supplied Sikaplan® G Membranes

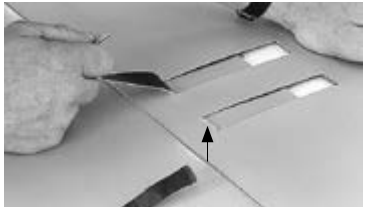
	Leister Varimat V2	Sarnamatic® 681
Speed	2.5 m/min.	All data are pre-set
Temperature	520 °C	All data are pre-set
Air setting	100 %	All data are pre-set

TEST WELDS

Before welding Sikaplan® G membrane, a test weld must be carried out to check the settings of the hand-held welder and/or the automatic welding machine. Test welds must be also carried out to check local site conditions during the working day.

A test weld consists of:
a) Test welding with peel test
b) Seam check during test welding
c) Seam check after test welding

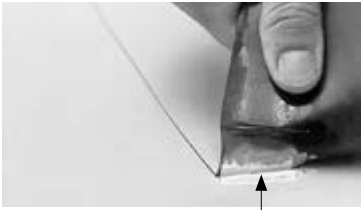
a) Test Weld with Peel Test
1. Test welding
– Carry out a test weld (automatic/manual).



2. Peel test across the seam
The welding seam must be fully cooled.
– Cut a small strip into the upper roofing sheet.
– Pull away the strip of the upper membrane perpendicular to the seam.

The mode of failure shall be classified as:
a) Peeling of the joint
b) Break outside of the joint
c) Delamination of sheet

TEST WELDS



3. Peel test along the seam

- Cut a small strip over the fully cooled welding seam at the beginning or end of the welding seam.
- Pull away the strip of the upper membrane in the direction of the seam.

The mode of failure shall be classified as:

a) Peeling of the joint
b) Break outside of the joint
c) Delamination of sheet

b) Seam Check During Test Welding
During welding the seam must be visually checked.
- Only slight smoke during welding
- Size of the welding bead:

A continuous, excessively large welding bead is an indication of an improperly welded seam.

c) Seam Check After Test Welding
After welding the seam should be visually checked.
- The surface should be shiny
- Material discoloration:

Black or brown discoloration in the weld overlap (visible when pulling away the upper sheet at the end of the seam) indicates that the welding temperature is too high or the welding speed too slow.

SEAM CHECKS

Seam Check During Welding
Correct welding is indicated by:
- Slight smoke during welding
- Shiny roofing sheet surfaces
- Proper size of the welding bead.

Attention:
- **Material discoloration:**
  Black or brown next to or in the weld itself indicates that the welding temperature is too high or the welding speed is too slow.
- **Size of the welding bead:**
  A continuous, excessively large welding bead is an indication of an improperly welded seam.

Formation of a Welding Bead During Automatic Welding
During automatic welding the welding bead can be seen underneath the pressure roller during the welding process. After the cooling period a clearly visible welding bead should remain with Sikaplan® G membranes.

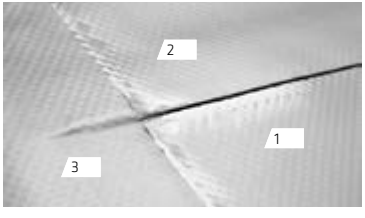
Formation of a Welding Bead During Hand Welding
During hand welding the welding bead is more prominent and remains clearly visible after cooling.

SEAM CHECKS

Mechanical Seam Check
All seams must be checked mechanically once they have completely cooled. For this purpose a screwdriver (approx. 5 mm wide, with rounded edges) should be used. Although slight pressure should be applied to the seam, the roofing sheet must not be damaged.
The mechanical seam check assists in locating any seam areas not fully welded.

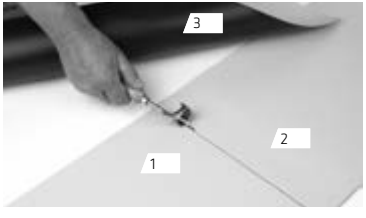
Visual Seam Check
After welding all seams should be inspected visually (shiny surfaces, size and quality of welding bead). Special attention should be paid to transverse joints, penetrations and flashings.

WELDS AT TRANSVERSE JOINTS

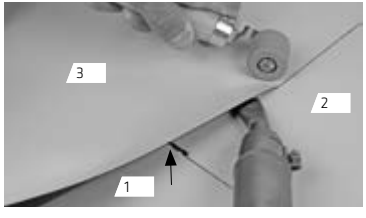


Lay out Sikaplan® G membrane properly.

Legend:
1 First Sikaplan® G membrane
2 Second Sikaplan® G membrane
3 Transversal Sikaplan® G membrane

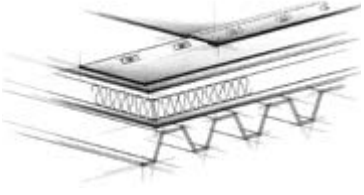


To achieve proper welding, all transverse joints, Sikaplan® G membranes with thickness of 1.5 mm and more have to be chamfered in the area of transverse joints (=T-joints).



Weld Sikaplan® membrane over the chamfered area.

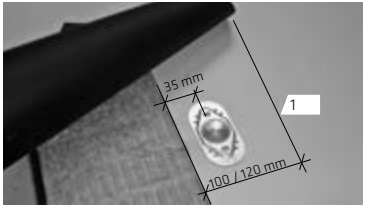
Attention:
- Avoid gaps and capillaries.
- Always check seams at transverse joints (= T-joints) after welding.



Sikaplan® G Membrane with Spot Fastening in the Overlap

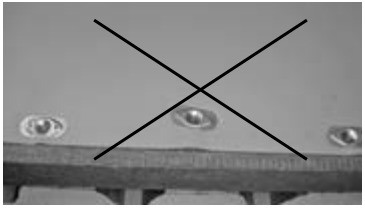
- Fasten thermal insulation boards with fasteners and insulation washers. Use at least 1 fastener per insulation board or m^2.
- Unroll Sikaplan® G membranes without causing tension.
  Lay out Sikaplan® G membranes perpendicular to deck ribbing.

Sikaplan® G membranes have marks to help you to lay and position the rolls.



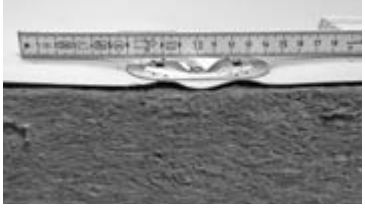
Sikaplan® G membrane is fastened using fasteners and washers placed along the marked line 35 mm from the edge of the membrane.

- Space fasteners in accordance with project specifications by Sika Technical Service for Roofing.
- Unroll the next Sikaplan® G membrane along marked line No. 1. Overlap by 100 mm for Sikaplan® G/VG membranes and 120 mm for Sikaplan® VGWT membranes.
- Weld the overlap.

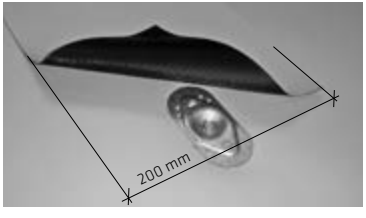


Attention:
Use an automatic setting tool or an electric screwdriver with depth guide to install fasteners and washers.

Incorrect positioning and/or setting of fasteners and washers will substantially reduce the wind-uplift resistance of the system.



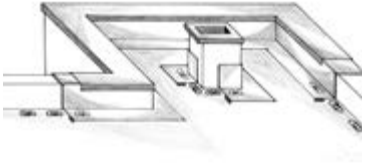
Attention:
When the fastener is correctly anchored, the washer will be level with the Sikaplan® G membrane.



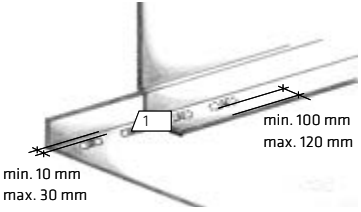
In perimeter and corner areas where additional fastening is required, fasteners and washers are installed through the membrane.

- Cover the rows of fasteners with a 200 mm wide membrane cover strip and weld both sides.
- Space the fasteners in accordance with project specifications by Sika Technical Service for Sika Roofing.

Important Notes:
- All fasteners must be fastened immediately after the Sikaplan® G membrane has been installed. Failure to do so may result in permanent membrane deformation.
- All welding on the flat roofing must be carried out with an automatic welding machine or a handheld welder.

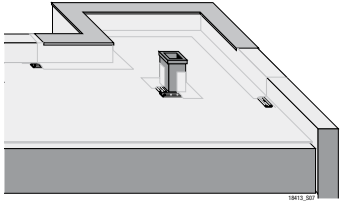


Perimeter Fastening for Absorption of Horizontal Forces
All flashings, terminations and penetrations in mechanically fastened systems must be secured mechanically using individual fasteners and washers in accordance with project specifications by Sika Technical Service for Roofing.

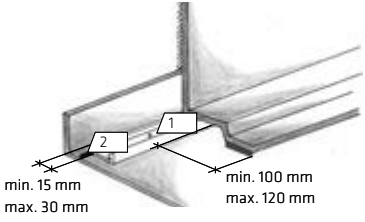


Using Individual Fasteners and Washers
The number and type of fasteners per linear meter depend on the substrate and wind load (pullout value).

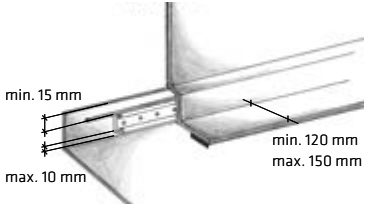
Additional fastening:
At least 4 fasteners (1) per linear meter must be used.



Perimeter Fastening for Absorption of Horizontal Forces
All flashings, terminations and penetrations of mechanically fastened systems must be secured mechanically using Sarnabar® in accordance with project specifications by Sika Technical Service for roofing.

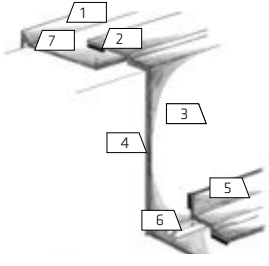


Fastening in Roof Deck
The Sarnabar® must be anchored using suitable fasteners into the roof deck.
Sarnabar® types 6, 6/10, 6/15 (1) with at least 4 fasteners per meter must be used.
In addition an SikaRoof® Welding Cord PVC of 4 mm diameter (2) must be welded to the side of the fastening bar facing the upstand. The welding cord protects the membrane against tearing by wind uplift.



Fastening in Upstand
The Sarnabar® can also be anchored into the transition area of the upstand by using suitable fasteners. If the roof structure in the upstand area is not strong enough (e.g. timber planking, aerated concrete, thin metal sheets, skylight frames etc.) the fastening may be anchored into the roof deck.

Mechanically Fastened Perimeter Flashing
Fix the fastening bar (Sarnabar®) over the Sikaplan® G membrane at junctions, along either the vertical surface of the upstand or the horizontal surface of the roof.
A levelling/separation layer must be installed between Sikaplan® G membrane and rough or bituminous substrates.
The number and type of fasteners per linear meter depend on the substrate and the wind load (pullout value). Fastener type and spacing and type of Sarnabar® must be in accordance with specifications by Sika Technical Service for Roofing.
At least 4 fasteners per linear meter must be used.



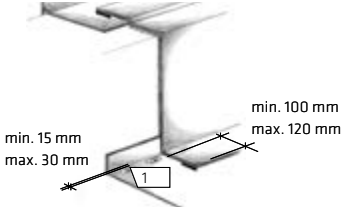
1 Sika-Trocal® Metal Sheet Type S
2 Hot air weld
3 Sikaplan® G membrane welded to Sika-Trocal® Metal Sheet Type S at top of parapet
4 Levelling/separation layer
5 Cover strip
6 Sarnabar®
7 S-Sealing tape

Parapets higher than 500 mm require additional linear fastening.

Sarnabar® must be fastened with at least 4 fasteners per linear meter.

Fully Adhered Perimeter Flashing
Flashings are formed using strips of Sikaplan® G membrane flashing strip.

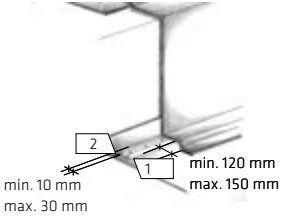
Sikaplan® G membrane flashing strip is fully adhered to the upstand with Sika-Trocal® C 733 adhesive and welded to the roofing sheet.



Fastening in Roof Deck Perimeter Fastening for Absorption of Horizontal Forces

Fastening in Roof Deck Using Individual Fasteners and Washers
The number and type of fasteners (1) per linear meter depend on the substrate and the wind load (pullout value), and must be in accordance to project specifications by Sika Technical Service for Roofing.

Additional fastening: At least 4 fasteners per linear meter must be used



Perimeter Fastening for Absorption of Horizontal Forces

Fastening in Roof Deck or in Upstand Using Sarnabar®

Sarnabar® types 6,6/10,6/15 (1) with at least 4 fasteners per meter must be used.

S-Welding Cord of 4 mm diameter (2) must be welded to the side of the fastening bar facing the upstand.

Sikaplan® G membrane is adhered with Sika-Trocal® C 733 adhesive to substrates such as reinforced concrete, rendering, wood panels, metal sheets etc.

The substrate must be solvent resistant, clean, dry and free of grease and dust.
The container must be closed when work is interrupted. Sika-Trocal® C 733 adhesive may be diluted with Sika-Trocal® CV 733 thinner (max. 10%).

- Thoroughly stir Sika-Trocal® C 733 adhesive before use.
- Sika-Trocal® C 733 adhesive is to be evenly applied with a brush or roller to the substrate layer.
- Absorbent substrates require two coats of adhesive.

- Apply Sika-Trocal® C 733 adhesive to the underside of the Sikaplan® G membrane flashing strip.

Attention:
No adhesive may be located in the welding area. Residual adhesive must be removed with Sika-Trocal® Cleaner L 100 or Sika-Trocal® Cleaner 2000.

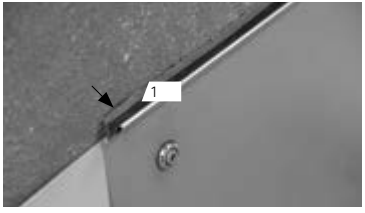
Finger Test:
Let Sika-Trocal® C 733 adhesive completely evaporate.
Evaporation time depends largely on weather conditions, the substrate layer itself and the amount of adhesive applied.

After the solvent has evaporated, place Sikaplan® G membrane flashing strip onto the coated substrate layer and press down firmly, using a hand roller.

General Information
- Use Sikaflex® 11 FC sealant.
- The surface must be clean, dry and free of dust and dirt.
- Surfaces must be primed before sealant is applied.

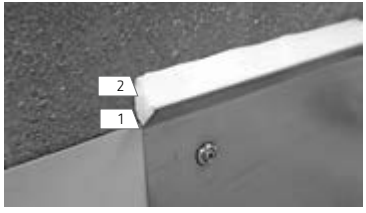
Sealing around Skylights
- Apply Sika® Primer-3 N along the frame edge and allow it to evaporate.

- Form an angled bead of sealant using Sikaflex® 11 FC.



Sealing at Counter Flashings
To achieve a sealant bond at both faces of the junction, it is recommended to install a backing rope (1).

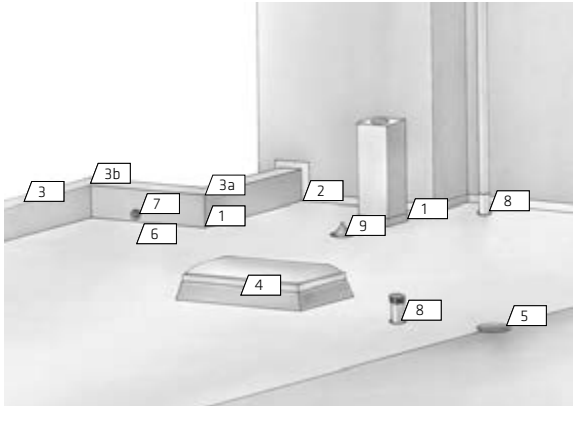
Apply Sika® Primer-3 N to contact areas (metal, brickwork or plaster). Allow Sika® Primer-3 N to evaporate.



Apply Sikaflex® 11 FC sealant over the backing rope (1) and strike the bead to form a concave surface (2).

4 DETAILS

DETAIL OVERVIEW



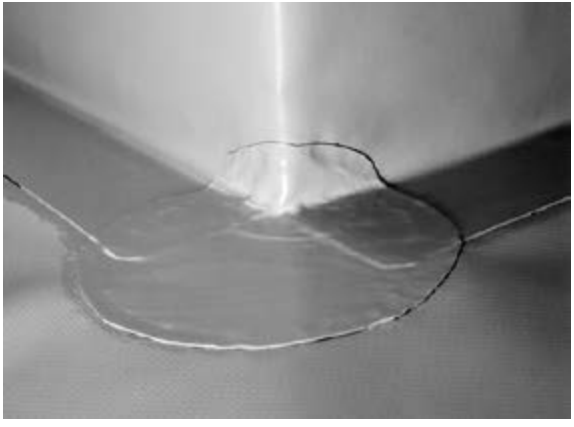
Detail Overview

1 Outside Corner at Roof Level
2 Inside Corner at Roof Level
3 Roof Trim
3a Outside Corner at the Top of Parapets
3b Inside Corner at the Top of Parapets
4 Skylights
5 Drains
6 Scuppers
7 Overflows
8 Vent pipes & Posts
9 Lightning Protection

DETAILS

1 OUTSIDE CORNER AT ROOF LEVEL

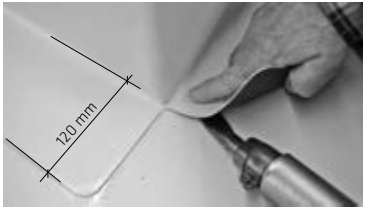
COMPLETED OUTSIDE CORNER - FINISHED WITH PRE-FABRICATED Sikaplan® S CORNER PVC



1 OUTSIDE CORNER AT ROOF LEVEL

Prevent water penetration into roof-build-up during the application process.

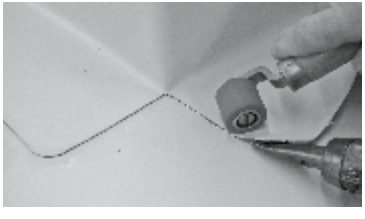
- Fold up the membrane edge at perimeter by approx. 50 mm.
- Weld a small, hand-cut patch of membrane to the corner.



- Adhere a Sikaplan® G membrane strip to the parapet with Sika-Trocal® C 733 adhesive.

Attention:
To allow mechanical fastening, overlap the roofing sheet by minimum 120 mm at roof level.

- Weld the flashing strip at the edge.



- Weld the overlap completely to the roofing sheet.

1 OUTSIDE CORNER AT ROOF LEVEL

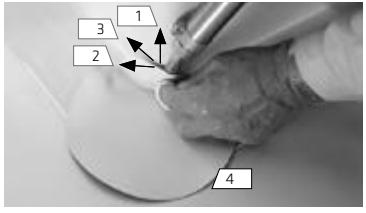
Finish with Hand-made Corner Patch

- Cut out a round piece of non-reinforced Sikaplan® 18 D membrane.
  The diameter must be large enough to cover both overlapping strips by at least 30 mm.
- Heat and stretch the piece.

Or finish with Pre-fabricated Sikaplan® Corner 1

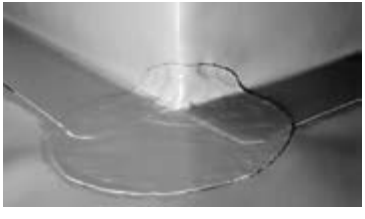
- Use pre-fabricated Sikaplan® Corner 1.
  This is faster than the procedure described above.

- Place the hand-cut or pre-fabricated corner patch in position.



- Weld the patch from rear to front, following the steps 1 – 4 shown above.
- Use a 20 mm nozzle.

1 OUTSIDE CORNER AT ROOF LEVEL



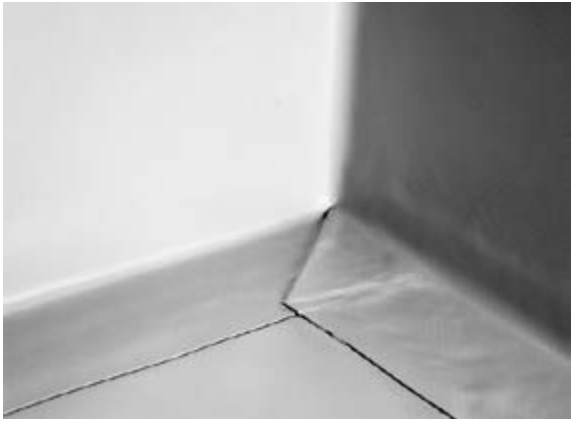
Completed outside corner at roof level.

Check all welds.

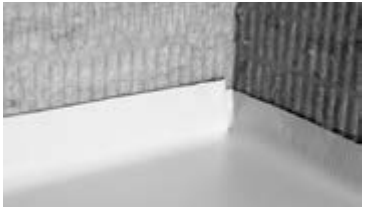
DETAILS

2 INSIDE CORNER AT ROOF LEVEL

COMPLETED INSIDE CORNER – WITH HORIZONTAL CREASE

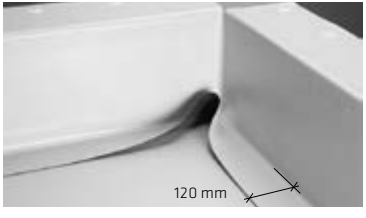


2 INSIDE CORNER AT ROOF LEVEL



Inside Corner with Horizontal Crease
Prevent water penetration into roof build-up during application.

- Lay Sikaplan® G membrane along the parapet with a 50 mm upstand.
- Fold the membrane into an upright position at the corner.
- Weld the fold.



- Adhere a Sikaplan® G membrane flashing strip to the parapet.

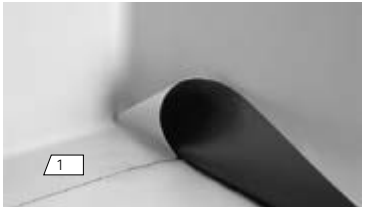
Attention:

- To allow mechanical fastening, overlap the roofing sheet by minimum 120 mm at roof level.

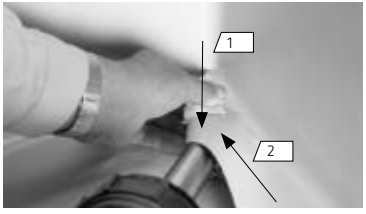
- Spot weld the Sikaplan® G membrane flashing strip along the roof valley and weld it fully into the corner. Work from the inside towards the front edge.

DETAILS

2 INSIDE CORNER AT ROOF LEVEL



- Weld the Sikaplan® G membrane flashing strip (1) completely to the roofing sheet.



- Weld the fold (1) from rear to front.
- Weld the second flange of the Sikaplan® G membrane flashing strip (2) to the roofing sheet.

- Weld the fold onto the membrane. Start in the corner.
- Be sure to stagger the welding seams.

DETAILS

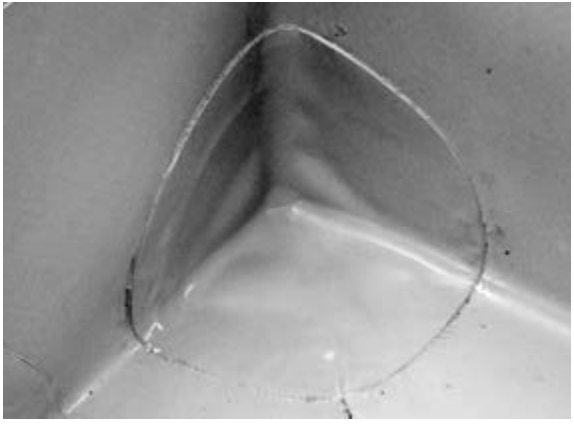
2 INSIDE CORNER AT ROOF LEVEL

Completed inside corner with horizontal crease.

Check all welds.

2 INSIDE CORNER AT ROOF LEVEL

COMPLETED INSIDE CORNER – FINISHED WITH PRE-FABRICATED Sikaplan® CORNER PVC



2 INSIDE CORNER AT ROOF LEVEL

Inside Corner Finished with Pre-fabricated Sikaplan® S corner PVC

- Adhere Sikaplan® G membrane flashing strip and execute corner detail as shown above.

- To finish the inside corner use a pre-fabricated Sikaplan® S corner PVC.
- First weld the piece into the corner.
- Then weld along the valleys.

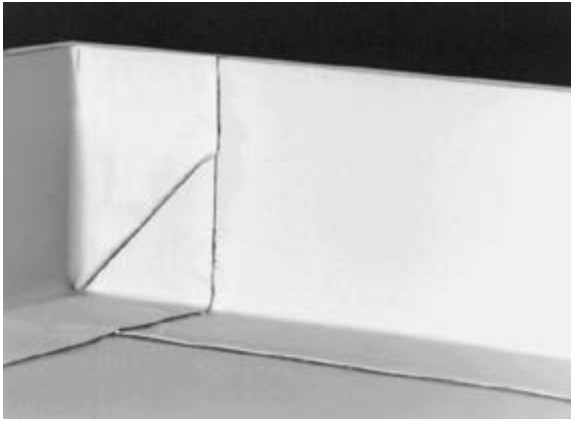
- Finally, weld all surfaces.

Check all welds.

DETAILS

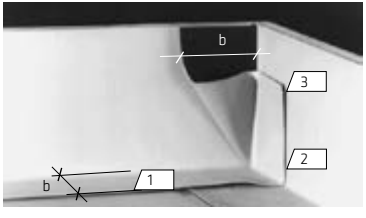
2 INSIDE CORNER AT ROOF LEVEL

COMPLETED INSIDE CORNER – WITH UPRIGHT CREASE



2 INSIDE CORNER AT ROOF LEVEL

- Cut the first Sikaplan® G membrane flashing strip to fit.
- Coat the upstand with Sika-Trocal® C 733 adhesive.
- Apply adhesive to the flashing strip. Allow the adhesive to evaporate (finger test).
- Adhere the Sikaplan® G membrane flashing strip to the tack-dry surface.
- Weld the overlap to the roofing sheet.



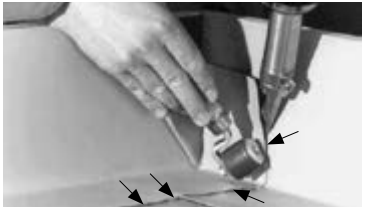
- Cut and adhere the second Sikaplan® G membrane flashing strip to the upstand so that overlap (b = min. 120 mm) measures the same on the roof surface as in the corner. An upright crease is thus formed.

Attention:
No adhesive may be applied in the welding areas.

- Spot weld the Sikaplan® G membrane flashing strip in 3 spots (1–3)

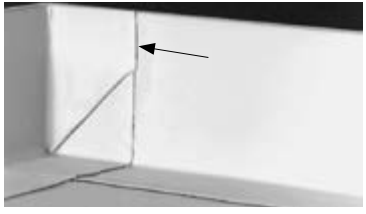
- Weld the crease shut to a closed pocket. Work from the inside towards the front edge.

2 INSIDE CORNER AT ROOF LEVEL



– Weld the Sikaplan® G membrane flashing strip to the roofing sheet and to itself.

– Starting from the upright corner area, weld the closed pocket to the roofing sheet upstand (pre-weld and final weld).



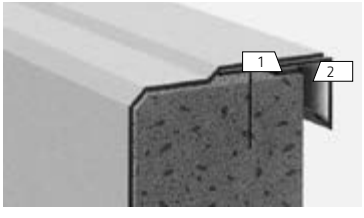
– Complete by welding the overlapping area.

2 INSIDE CORNER AT ROOF LEVEL

Completed inside corner with upright crease.

Check all welds.

COMPLETED ROOF TRIM WITH SIKA-Trocal® METAL SHEET TYPE S



Roof Trim with Sika-Trocal® Metal Sheet Type S with Butt Joints

- Place S-Sealing tape (1) under the Sika-Trocal® Metal Sheet Type S. This prevents water and wind from penetrating.
- Fix the Sika-Trocal® Metal Sheet Type S (2) with fasteners into the substrate. Space fasteners at 200 mm, staggered in two rows.

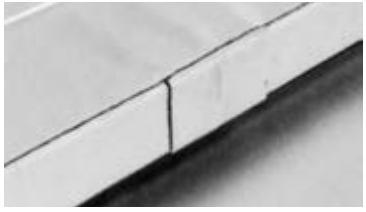
- Allow an expansion gap of min. 5 mm at butt joints between pieces of Sika-Trocal® Metal Sheet Type S.

- Cover the butt joints between pieces with masking tape 20 mm in width.

3 ROOF TRIM

- Cut a 120 mm wide cover strip of non-reinforced Sikaplan® 18 D membrane.
- Weld the cover strip on both sides onto the Sika-Trocal® Metal Sheet Type S.

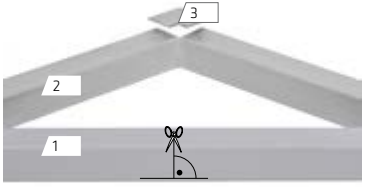
- Adhere Sikaplan® G membrane flashing strip to the parapet.
- Keep the welding area free from adhesive.
- Weld the Sikaplan® G membrane flashing strip to the Sika-Trocal® Metal Sheet Type S.



Completed roof trim with Sika-Trocal® Metal Sheet Type S.

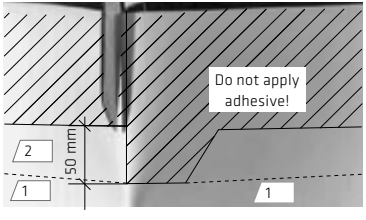
Check all welds.

3A OUTSIDE CORNER AT THE TOP OF PARAPETS



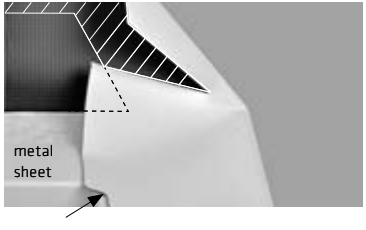
Cut Sika-Trocal® Metal Sheet Type S to fit the corner

- Mark miter at right angles and cut open (1).
- Bend the Sika-Trocal® Metal Sheet Type S and fasten to the substrate.
- Cover the exposed area of the corner by slipping a piece of metal sheet (3) underneath the Sika-Trocal® Metal Sheet Type S (2).



(Roof side view)

- Apply Sika-Trocal® C 733 adhesive to the substrate.
- Apply Sika-Trocal® C 733 adhesive to the Sikaplan® G membrane flashing strip. Keep the area shown free from adhesive to allow welding later on.
- Adhere the Sikaplan® G membrane flashing strip to the substrate (vertical roof trim area 1).
- Cut open the corner to a distance of 50 mm above the top of the parapet.
- Adhere the Sikaplan® G membrane flashing strip to the front edge area of the parapet (area 2).

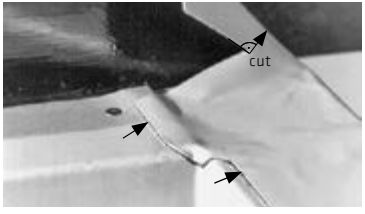


(View from outside / metal-sheet side)

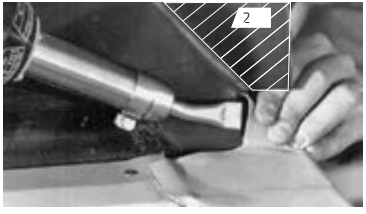
- Cut the Sikaplan® G membrane flashing strip to size at the adhered parapet front edge.

DETAILS

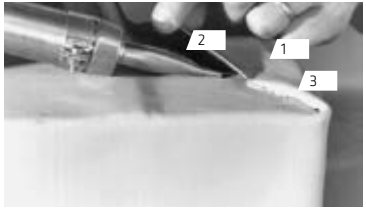
3A OUTSIDE CORNER AT THE TOP OF PARAPETS



- Weld the Sikaplan® G membrane flashing strip to the Sika-Trocal® Metal Sheet Type S.
- Cut the upstanding Sikaplan® G membrane flashing strip at a right angle as illustrated.

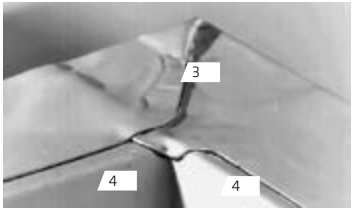


- Form a crease.
- Weld the crease together (membrane pocket).



(View from roof side)
- Fold down the welded crease and adhere the Sikaplan® G membrane flashing strip to the substrate layer (1).
- Cut the Sikaplan® G membrane flashing strip (2).
- Weld the crease to the Sikaplan® G membrane flashing strip (3).

3A OUTSIDE CORNER AT THE TOP OF PARAPETS

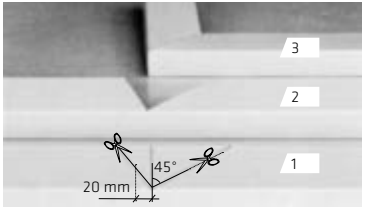


(View from outside / metal-sheet side)

- Weld the Sikaplan® G membrane flashing strip to the Sika-Trocal® Metal Sheet Type S (4), and to the already welded Sikaplan® G membrane flashing strip (3).

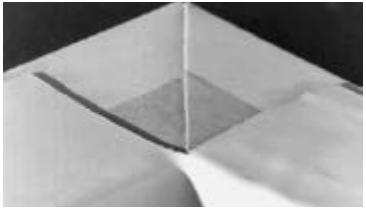
Check all welds.

3B INSIDE CORNER AT THE TOP OF PARAPETS

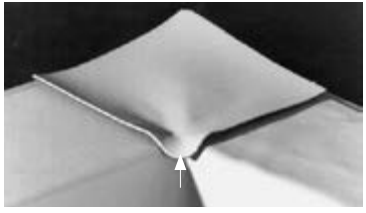


Cut Sika-Trocal® Metal Sheet Type S to fit the inside corner

- Mark miter on the Sika-Trocal® Metal Sheet Type S (1).
- Cut Sika-Trocal® Metal Sheet Type S to size as shown (2) (45° and 20 mm).

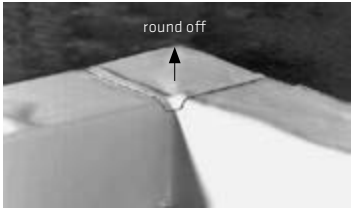


- Cut a Sikaplan® 18 D membrane corner patch to fit the inside corner.



- Round the corner of the membrane patch.
- Heat and stretch the inside, rounded corner.

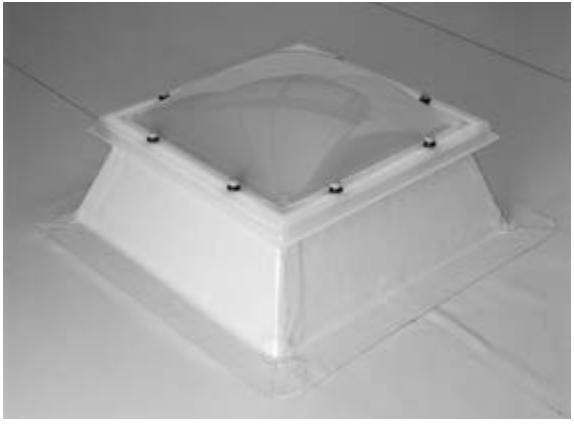
3B INSIDE CORNER AT THE TOP OF PARAPETS

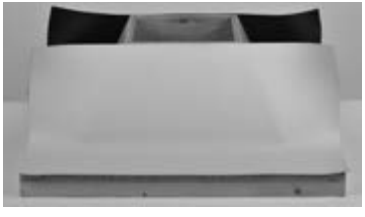


– Weld the Sikaplan® 18 D membrane patch and round off the outer corner.

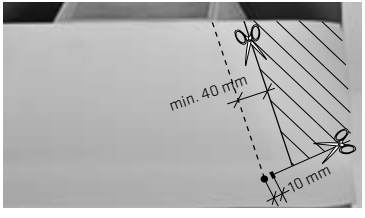
Check all welds.

COMPLETED SKYLIGHT DETAIL





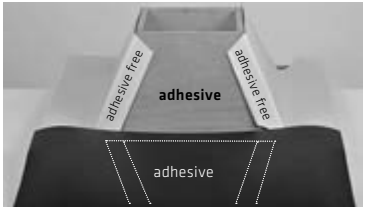
- Apply Sika-Trocal® C 733 adhesive around the skylight.
- Apply Sika-Trocal® C 733 adhesive to two Sikaplan® G membrane flashing strips and adhere the strips to opposite sides of the skylight. Ensure installation without air pockets.



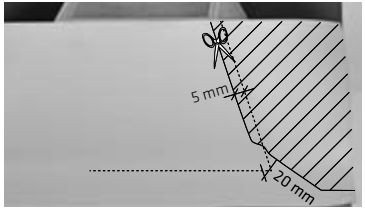
- Mark and cut the corners as illustrated.

- Warm up the overlaps.

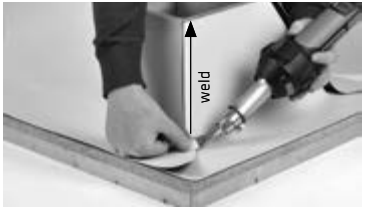
- Fold the membrane overlap around the skylight edges and adhere.



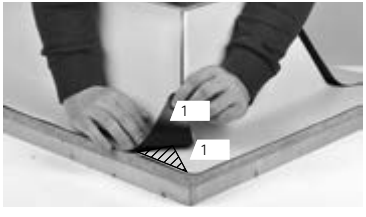
- Take two more Sikaplan® G membrane flashing strips and mark the adhesive area.
- Adhere the two remaining Sikaplan® G flashing strips without air pockets.



- Cut the Sikaplan® G membrane strips along the line as illustrated.
- In the lower corner area – leave an additional membrane "thumb tab" of 20 mm for welding.



- Pre-weld and final weld along the vertical seam starting from the “thumb tab”.



- Round off the corners of the flashing strip flanges (1).
- Cut off excess material as illustrated.

- Pre-weld and final weld the horizontal seam.

- Weld the membrane “thumb tab”.
- Weld gradually from the back edge of the seam towards the front.

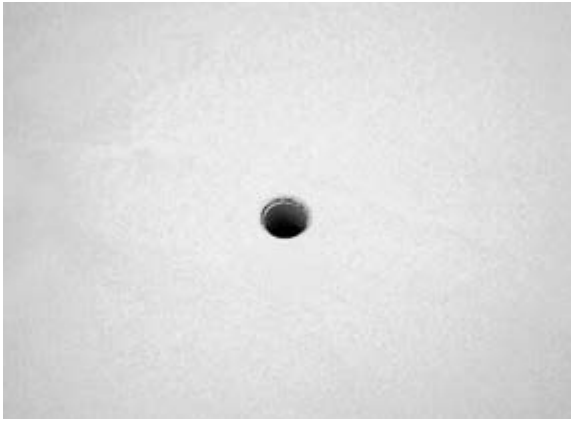
- Press down the warmed up thumb tab.

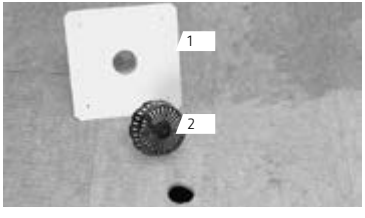
- Weld the flange tight.

Completed skylight
- Seal the upper open perimeter and the joint of the skylight frame using Sika® Primer-3N and Sikaflex® 11 FC Sealant.
- For sealing instructions refer to the corresponding chapter in this application manual.

Check all welds.

COMPLETED DRAIN DETAIL





Use Pre-fabricated Drains and Leafguards
1 Injection-moulded PVC roof drain (S-Drain)
2 S-Leafguard, round

- Place the S-Drain, and fix it securely to the roof deck with at least 4 fasteners. Make sure fasteners do not protrude.
- Cut a hole into the Sikaplan® G membrane, approx. 20 mm larger than the diameter of the drain.

- Place the Sikaplan® G membrane.
- Draw the S-Drain opening onto the roofing sheet and cut it open.

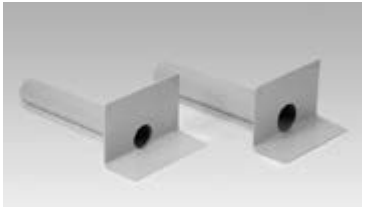
5 DRAINS

– Weld the Sikaplan® G membrane onto the S-Drain flange.

– Mount a round S-Leafguard onto the drain.

COMPLETED SCUPPER DETAIL

6 SCUPPERS



Pre-fabricated scuppers should be used (S-Scupper).

- Cut two matching Sikaplan® G membrane pieces as illustrated. Cut larger than scupper flange.
- Weld the first flashing piece to the scupper flange.

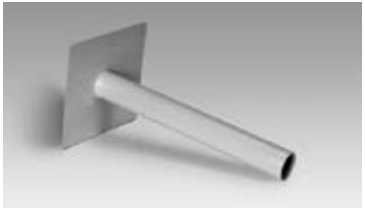
- Weld the second flashing piece to the flange, overlapping the first.

6 SCUPPERS

- Secure the prepared scupper through Sikaplan® G membrane to the roof deck and parapet with at least 4 fasteners. Make sure fasteners do not protrude.
- Weld the flashing overlaps to the Sikaplan® G membrane at roof level and parapet.

Check all welds.

COMPLETED OVERFLOW DETAIL



- Use pre-fabricated overflows (S-Overflow).

Application Variant 1
- Position the overflow in the parapet and secure it with at least 4 fasteners. Make sure fasteners do not protrude.

- Adhere a Sikaplan® G membrane flashing strip to the parapet with Sika-Trocal® C 733 adhesive.
- Cut a hole into the flashing strip with a diameter approx. 5 mm larger than the overflow opening.
- Weld the flashing strip to the overflow flange.

Application Variant 2
Sikaplan® G Membrane Flashing Strip Pre-applied

a. Preparation of the overflow
- Cut a piece of Sikaplan® G membrane as illustrated – larger than the overflow flange.
- Cut a hole into the flashing piece. The diameter should be approx. 5 mm larger than the diameter of the overflow opening.
- Weld the flashing to the overflow flange.

b. Installation of the overflow to the parapet
– Insert the prepared overflow through the Sikaplan® G membrane flashing strip and secure it with at least 4 fasteners. Make sure fasteners do not protrude.
– Weld the Sikaplan® G membrane flashing strip overlap of the overflow to the already adhered Sikaplan® G membrane flashing strip.

Completed overflow detail

Check all welds.

COMPLETED VENT PIPE DETAIL WITH PLASTC CAP

8 VENT PIPES AND POSTS

Vent Pipe or Post Flashing

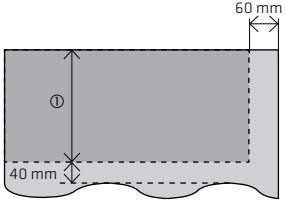
- Cut the Sikaplan® G membrane from the edge perpendicularly to the point of penetration.
- Make a cut-out to fit the vent pipe or post.

- Weld the longitudinal seams at the edges of the Sikaplan® G membrane.
- Cut a Sikaplan® G membrane strip and weld it over the cut to the vent pipe.

Note:
For easy installation use pre-fabricated S-Pipe Flashings or S-Post Flashings. If no pre-fabricated S-Pipe Flashing or S-Post Flashing is available on your site, you can hand-make the flashing as follows:

Measure and cut a piece of non-reinforced Sikaplan® 18 D membrane as pipe or post flashing.

- Or use pre-fabricated Sikaplan® Pipe Flashing.



Size of pipe/post flashing piece:

① Height of pipe
Seam area for welding
Area to be adhered
Edge to be stretched

The 60 mm overlap is added to the circumference

Attention:
All surfaces to be welded must be kept free from adhesive.

8 VENT PIPES AND POSTS

- Cut a flange from a piece of Sikaplan® G membrane.
- Cut a hole into the flange approx. 10 mm smaller than the diameter of the vent pipe.
- Slide the flange, without heating, over the vent pipe to create an upstand of 10 mm.
- Cut a piece of Sikaplan® S membrane as pipe flashing with an overlap of 30 mm.

- Spot weld the overlap of the pipe flashing.

8 VENT PIPES AND POSTS

– Cut the flange to a round shape.

– Final weld the flange to the roofing sheet.

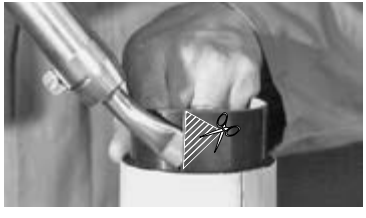
– Weld the vertical overlap from bottom to top. Use a 20 mm nozzle.

Finished Vent Pipe Flashing with a Plastic Cap

- Cover the vent pipe with a plastic cap.

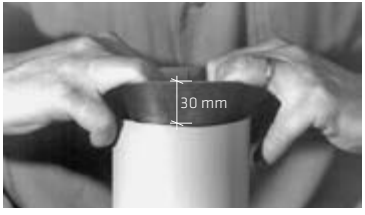
If no plastic cap is available, form a hand-made cap out of non-reinforced Sikaplan® 18 D membrane.

- Insert a piece of Sikaplan® 18 D membrane into the vent pipe. Length minimum 50 mm, overlap approx. 20 mm.
- Spot weld the overlap.
- Cut the overlap edge as illustrated.



- Pull the whole cap piece out of the pipe.
- Weld the inside overlap.

8 VENT PIPES AND POSTS



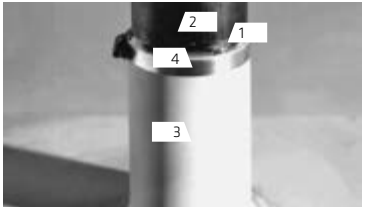
- Insert the cap piece into the vent pipe.
- Make sure that approx. 30 mm of material protrudes.
- Fold the cap piece over the vent pipe.

- Spot weld the cap piece in several places to the pipe flashing.

- Completed vent pipe with hand-made cap.

Check all welds.

8 VENT PIPES AND POSTS



Finished Post Flashing with Jubilee Clip

- Prime the sealing area with Sika® Primer-3 N and let it evaporate. (1)
- Apply Sikaflex® 11 FC sealant (2) between the post and the Sikaplan® 18 D membrane flashing strip (3).
- Secure the Sikaplan® 18 D membrane flashing strip (3) (over the sealant) with a jubilee clip (4).

9 LIGHTNING PROTECTION

Lightning Protection with Pre-fabricated Part
For easy installation use pre-fabricated S-Lightning Conductor Flashing Typ F.
Slide the piece over the lightning conductor and weld (pre-weld and final-weld) the overlap to the Sikaplan® G membrane.
Finish the detail with a jubilee clip.

NOTES

FOR MORE ROOFING INFORMATION:

The information contained herein and any other advice are given in good faith – based on Sika Roofing's current knowledge and experience of products when properly stored, handled and applied under normal conditions in accordance with Sika Roofing recommendations. The information given only apply to the applications and products expressly referred to herein. The information given is based on laboratory tests which do not replace practical tests. In case of changes in any parameter of the application, such as changes in substrates, or in case of a different application, consult Sika Roofing Technical Service prior to using Sika Roofing products. The information contained herein does not relieve the user of the products from testing them for the intended application and purpose. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned. Copies of which will be supplied on request.

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