



WOLFIN[®]
BAUTECHNIK

Installation Guidelines

COSMOFIN[®] FG

WATERPROOFING
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Version: 06/2016

Installation Guidelines for COSMOFIN FG (PVC-P-NB roofing and waterproofing membrane, reinforced in the middle with a polyester fabric) DE/E1 PVC-P-NB-V-PW

1. Determining the local conditions

1.1 Condition of the deck substrate and requirements for the load-bearing structure

- Inspected and approved dead load of the roofing layers.
- Cast-in-situ reinforced concrete decks and precast concrete decks are to be checked for their suitability before work begins.
- The surfaces should be dry, no sharps, run continuously without interruption and be free of honeycombing and foreign bodies.
- Joints between prefabricated concrete decks must be fully mortared (exception: building expansion joints).
- Deck substrates such as sarking boards, chip-board, trapezoidal steel sheet, etc. must be sufficiently stiff and installed on load-bearing substructures.

Defects arising from the provision of services by previous contractors, insofar as they can be identified during a visual inspection and could negatively influence the design and function of any subsequent work, **must be reported in writing before the provision of your own services**

1.2 Condition of the roofing layers for renovation work

In order to be able to determine the condition of the existing roof construction, it will necessary to cut core samples through the old roof layers. This will facilitate the inspection of the vapour barrier, adhesion to the deck substrate and adhesion of individual layers to one another, the resistance to moisture penetration of the thermal insulation, any possibly existing cavities, blistering, etc.

Before issuing an invitation to tender, the builder should commission a roof condition survey of the existing roof construction. Otherwise any necessary additional tasks that are not contained in the project specification may have to be approved based upon a supplementary quotation.

Attention:

Thermal insulation materials below the vapour barrier have a negative effect on the dew point location. When carrying out waterproofing measures on hollow core slabs, aerated concrete, pumice concrete or similar, the heat-insulating layer must be augmented so that the point at which condensation may occur is located above the vapour barrier. The dew point location and the water vapour/diffusion conditions must be established!

2. Installing COSMOFIN FG

2.1 Information on storage

The rolls are to be protected against moisture until they are used. Do not store the rolls directly on the surface of the roof; store on pallets or similar.

2.2 Preparing the surfaces

In addition to the previously described requirements for the load-bearing structure, it must be ensured that the surfaces have been thoroughly cleaned and any standing water removed before the subsequent installation of the additional roofing layers.

When laying the membrane directly on rough substrates, concrete, screed or wood, it is always necessary to use a protective / separating layer of WITEC PES protection fleece 300 g/m².

In the event of chemical incompatibility e.g. with hard foam or bituminous substances, a suitable separating layer should be installed.

2.3 Loose laying

The COSMOFIN FG roofing and waterproofing membranes are loosely laid, welded at the seams and secured in place with either a ballast of gravel with a grain size of 16/32 mm on PE film $d \leq 0.20$ mm (coverage ≤ 50 cm), interlocking preformed concrete stone elements (no parquet stones) or concrete slabs on a protective layer of semi-rigid PVC secured against wind lift in accordance with EN 1991.

In the case of gravel that does not meet the standard (sharp-edged or sharp pieces of broken gravel) or if the gravel is applied through blasting, an additional protective layer of e.g. WITEC PES protection fleece (300 g/m²) is to be laid on the PE film.

Suitable coverings, which at the same time provide protection against wind lift, can consist of green roofs (on PE film $d \leq 0.20$ mm), preformed concrete stone elements (on a protective layer of semi-rigid PVC and a sand bed), concrete slabs (on gravel, support pads or mortar bags on PE film) or screed with a tile covering (on sliding support made out of double-laid 0.2 mm thick PE film). In general, linear fasteners must be fitted in all roof channels (valleys, gulleys), in front of all upstands (such as parapets, walls, roof protrusions, steps, etc.) and on roof trims (see 2.6).

2.4 Mechanically fixed laying

Loosely lay the COSMOFIN FG waterproofing membrane and mechanically fix it in place in the area where the seams overlap by at least 10cm using mechanical fixings (e.g. plate fasteners and screws).

When laying the membrane on flammable insulating materials, a fire protection layer made out of fibreglass (min. 120g/m²) is required.

Assessing the required number of fastening elements can generally be carried out using a separate calculation of the wind load in accordance with EN 1991 for the specific building.

WOLFIN's technical department can if requested carry out the necessary wind uplift calculations to determine the frequency of mechanical fasteners. Should these calculations be requested they will be made available to the customer once an order has been placed.

Depending on the geometry of the trapezoidal steel sheet, the number of mechanical fixings required may be greater in practice. The COSMOFIN FG membranes are to be adapted to these requirements. Therefore, it may be necessary, for example, to start with single or multiple strips of the COSMOFIN FG waterproofing membrane around the outside before the maximum width of the membrane can be used or to additionally fix the COSMOFIN FG waterproofing membranes in place in the centre of the membrane and to weld a strip of COSMOFIN FG over this fastener.

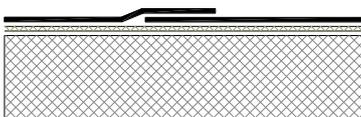
It is also generally necessary when using mechanical fixing that linear fasteners are fitted in all roof channels (valleys, gulleys), in front of all upstands (such as parapets, walls, roof protrusions, steps, etc.) and on roof trims (see 2.6).

2.5 Seam overlaps and joining techniques

2.5.1 Loose installation under ballast

The seam overlap must be at least 40 mm wide and welded to a width of at least 20 mm when using hot air welding or a width of at least 30 mm when using solvent welding. Both welding techniques deliver the same results.

It is absolutely prohibited to use an adhesive.

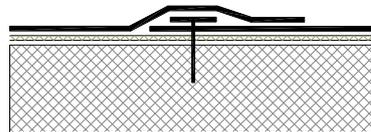


2.5.2 Mechanically fixed installation

The arrangement of the fastening elements must be carried out so that there is still a clearance of 2 cm to the edge of the membrane. The seams between the individual membranes should be overlapped so that a welding area of at least 4 cm still remains in front of the fastening elements.

In front of the fastening elements, the membrane seams are to be welded to a width of at least 20 mm when using hot air welding or a width of at least 30 mm when using WITEC COSMOFIN solvent welding agent. Both welding techniques deliver the same results.

It is absolutely prohibited to use an adhesive.



2.5.3 End joints and pre-cut sections

In the case of end joints and pre-cut sections, the membranes are to be welded as previously described. In order to prevent the formation of capillaries where there are multiple overlaps (T-butt joints), the welding areas at the transition to the underlying membrane are to be chamfered and pressed using a pressure roller at right angles to the seam line (hot air welding). When using solvent welding, these areas must be separately welded using hot air welding equipment.

General: Carry out test welds on the COSMOFIN FG membrane before completing the welding work!

2.5 Sealing the seams

COSMOFIN liquid should be used to seal the welded and inspected seams. (COSMOFIN liquid is excellent for indicating defect areas).

2.6 Measures for absorbing horizontal forces in the waterproofing layer or additional measures required for changes in the angle of the roof slope over 3° (5.2 %)

Irrespective of the information contained within other guides, linear fasteners using COSMOFIN coated metal sheet profiles or galvanised steel sheet (d>0.75 mm) should be fundamentally fitted for waterproofing using COSMOFIN FG roofing and waterproofing membranes in front of upstands in the waterproofing layer and in the case of changes in the angle of the roof slope > 3°.

The fasteners used for absorbing the exerted tensile force are to be compatible with the type and strength of the substructures. The fastenings must be assessed for tensile forces of at least 2.5 kN/m.

If auxiliary structures or substructures are required to absorb the tensile forces, these are to be fixed in place in such a way that they absorb the tensile forces from the linear fasteners.

For this reason, it may be necessary to increase the number of mechanical fixings. If required, an individual building-specific calculation is to be carried out.

The types of fastenings listed in the following table have proven themselves in practice.

Table 2.7

Substructure	Object for fastening	
	Wooden plank (thickness > 3 cm, width > 8 cm)	COSMOFIN coated metal steel sheet bracket, horizontal leg min. 40 mm
Reinforced concrete	Dowel 10 mm with screw 8 mm, spacing 30 cm or Spike twister from SFS intec, spacing 30 cm	Expansion rivet 4.8/26 mm, spacing 15 cm or Spike twister from SFS intec, spacing 20 cm
Lightweight concrete	Nail anchor 8 mm, spacing 30 cm	Nail anchor 8 mm, spacing 12 cm
Wooden beams wooden sarking / chipboard	Wood screw 8 mm, spacing 30 cm	Wood screw 4.5/30 mm, spacing 15 cm
Trapezoidal sheet metal	Self-drilling screw 4.5 mm, spacing 20 cm	Steel blind rivet 5 mm, spacing 12 cm

Mechanical fixing types that are compatible and approved for the substructure are to be used. The mechanical fixings must be installed so that they do not exert any damaging effect on the waterproofing membranes.

As an alternative to fastening with linear profiles, it is also possible to use approved individual fasteners (plate fasteners and screws) with a maximum spacing of 250 mm on buildings with a height of up to 12 m without internal pressure (for steel sheet profile / wooden material type vapour barriers e.g. WITEC SK vapour barrier membrane, with air-tight lateral connection) and not in exposed locations.

It is not permitted for these fastenings to be additionally used for protecting the roofing layers against wind lift. If connections and finishes are completely made out of COSMOFIN coated metal sheet profiles, these will also serve at the same time to absorb horizontal forces.

3. COSMOFIN coated metal sheet and profile system

3.1 COSMOFIN universal coated metal sheet system

COSMOFIN coated metal sheet profiles are required as connecting and trim profiles for wall connections, roof trims, etc. when laying COSMOFIN FG membranes. They are cut and chamfered from COSMOFIN coated metal sheet plates.

There must be a 5 mm wide gap between adjacent profiles. This gap is to be sealed over with at least 25 mm wide duct crepe strips and welded tight with at least 100 mm wide strips of COSMOFIN F. Joint connectors are additionally required for composite sheet verge flashing. The required fastening measures for absorbing the horizontal forces are described under Section 2.6.

Coated metal sheet profiles, such as verge flashing profiles, must be connected to the substructure in such a way that they can withstand the relevant wind loads. If required, an individual building-specific calculation is to be carried out in accordance with EN 1991 1-4/NA 2010-12. When installing on cement-based substrates, a separating layer made out of e.g. WITEC PES protection fleece should be fitted.

Depending on the width of the external vertical arm of the coated metal sheet profile and the height of the building, it may be necessary to install additional wind tape or continuous flashing.

4. Connections to upstands and roof edges

Connections to walls, angular protrusions, etc. must extend at least 150 mm above the upper edge of the roof covering (gravel cover, panel covering, earth covering, etc.) for roof slopes up to 5° and at least 100 mm for steeper roof slopes. The height of the roof trims must extend at least 100 mm above the upper edge of the roof covering (gravel cover, panel covering, earth covering, etc.) for slopes up to 5° and at least 50 mm for steeper roof slopes.

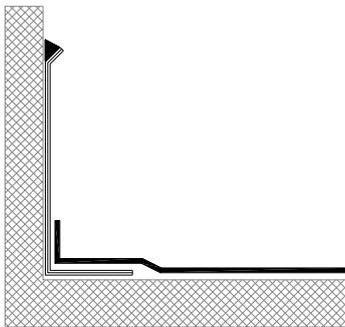
The external vertical leg (cover plate) for covers or verge flashing profiles must overlap the upper edge of the rendering or cladding by at least 50 mm for buildings with heights up to 8 m, by at least 80 mm for buildings up to 20 m and by at least 100 mm for buildings over 20 m. The drip edge on the cover plates must be aligned at a distance of at least 20 mm from those building components to be protected.

Connections and finishes are generally to be made windtight. A suitable method for achieving this is e.g. to lay wind sealing tape under a coated metal roof trim. Roof edges should have a distinct incline to the roof side so that atmospheric contaminants do not collect but run off with the rainwater.

4.1 Connections to upstands with COSMOFIN coated metal sheet profiles

Position and install the horizontal leg. The horizontal leg of the profile is bent at an angle of 100° so that its front lip will also nestle against the horizontal surface even if the shape of the substructure is not continuously straight. It is fastened in place on the lower edge of the vertical or horizontal leg in accordance with the guidelines in Table 2.7. On the upper vertical edge, the coated metal sheet profile must be additionally fixed in place at a spacing of 250 mm, the fastening points must be welded tight using COSMOFIN F discs.

Weld the COSMOFIN FG waterproofing membrane from the surface of the roof onto the composite sheet profile. Protect against any water running behind the profiles using Ceresit F173 Construction Silicon.

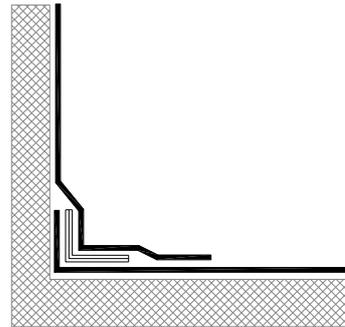


4.2.1 Installation with adhesive in the junction between the roof and upstands

Run the COSMOFIN FG waterproofing membrane from the surface of the roof along the foot of the upstand approx. 8 cm up the vertical plane. Install linear fasteners in the junction between the roof and the upstand using fastening elements with countersunk heads that are suitable for the respective substructure in accordance with Table 2.7.

Cut strips of COSMOFIN FG waterproofing membrane to the required dimensions. Apply Teroson AD 914 contact adhesive to the underneath of the membrane and the surfaces of the building components and allow to air dry.

Correctly align the connecting membrane and stick it down without any creasing to the substructure. The connection to the waterproofing membrane on the surface of the roof is made using hot air welding or solvent welding.

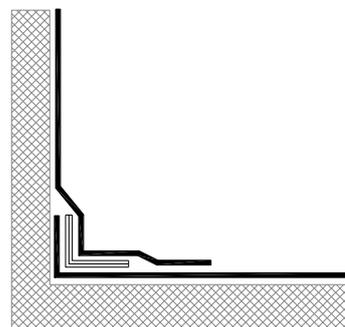


4.2.2 Loose installation in the junction between the roof and upstands

Run the COSMOFIN FG waterproofing membrane from the surface of the roof along the foot of the upstand approx. 8 cm up the vertical plane.

Install linear fasteners in the junction between the roof and the upstand using fastening elements with countersunk heads that are suitable for the respective substructure in accordance with Table 2.7.

Cut strips of COSMOFIN FG waterproofing membrane to the required dimensions. Correctly align the connecting membrane and fasten or weld it to the upper flashing. The connection to the waterproofing membrane on the surface of the roof is made using hot air welding or solvent welding.



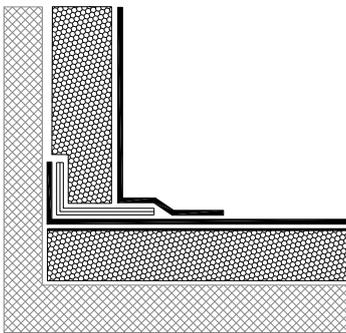
4.2.3 Loose installation in the junction between the roof and thermally insulated upstands

Run the COSMOFIN FG waterproofing membrane from the surface of the roof along the foot of the upstand approx. 8 cm up the vertical plane.

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Install linear fasteners made out of COSMOFIN coated metal sheet (horizontal leg at least 5 cm + the thickness of the insulation material) in the junction between the roof and the upstand using fastening elements with countersunk heads that are suitable for the respective substructure in accordance with Table 2.7. Cut the COSMOFIN FG connecting membrane to the required length. Correctly align the connecting membrane and fasten or weld it to the upper flashing. The connection to the waterproofing membrane on the surface of the roof is made by welding the coated metal sheet bracket to the surface membrane using hot air welding or solvent welding.

When laying the membrane on flammable insulating materials, a fire protection layer made out of fibreglass (min. 120g/m²) is required.

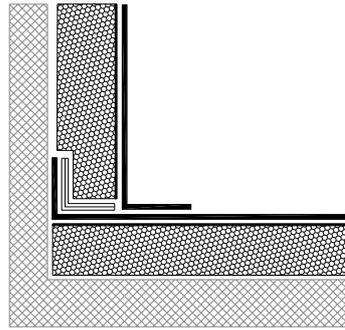


4.2.4 Installation with adhesive in the junction between the roof and thermally insulated upstands

Run the COSMOFIN FG waterproofing membrane from the surface of the roof along the foot of the upstand approx. 8 cm up the vertical plane.

Install linear fasteners in the junction between the roof and the upstand using fastening elements with countersunk heads that are suitable for the respective substructure in accordance with Table 2.7.

Cut the COSMOFIN FG connecting membrane to the required length. Apply Teroson AD 914 contact adhesive to the underside of the membrane and the surfaces of the building components (coated insulation plate) and allow to air dry. Correctly align the connecting membrane and stick it down without any creasing to the substructure. The connection to the waterproofing membrane on the surface of the roof is made using hot air welding or solvent welding.



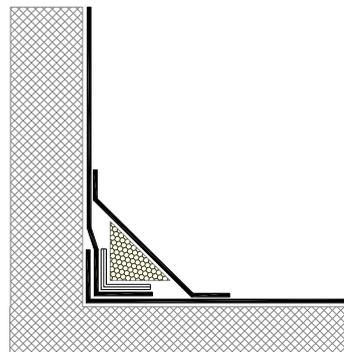
4.2.5 Wedges

If a wedge needs to be fitted to the foot of upstands, proceed as follows:

Run the COSMOFIN FG waterproofing membrane from the surface of the roof along the foot of the upstand approx. 8 cm up the vertical plane.

Run COSMOFIN FG waterproofing membrane vertically along the foot of the upstand and approx. 5 cm into the horizontal plane.

Install linear fasteners in the junction between the roof and the upstand using fastening elements with countersunk heads that are suitable for the respective substructure. Insert the wedge made out of mineral fibres or rigid polyurethane foam and then weld over with a correspondingly wide strip of COSMOFIN FG waterproofing membrane.



4.3 Intermediate fastening

In the case of connection height greater than 50 cm (loose laid connecting membranes) and greater than 100 cm (connecting membranes laid with adhesive), it is necessary to fit an additional intermediate fastening halfway up the connection height.

4.3.1 Intermediate fastening to upstands

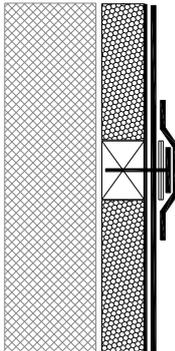
A strip of coated metal sheet (cut to a length of 7 cm, 2-sided 1 cm, folded by 180°) or a clamping bar is to be installed half way up the connection height (fastening distance 20 cm). A strip of COSMOFIN F waterproofing membrane is to be welded over this intermediate fastening.



4.3.2 Intermediate fastening to thermally insulated upstands

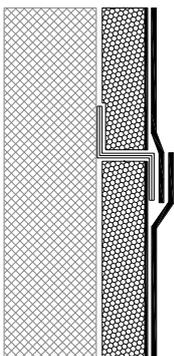
An auxiliary construction consisting of a wooden plank (dimensions: at least 5 cm x the thickness of the installed vertical layer of thermal insulation) or similar is required half way up the connection height.

A strip of coated metal sheet (cut to a length of 7 cm, 2-sided 1 cm, folded by 180°) or a clamping bar is then to be installed (fastening distance 20 cm). A strip of COSMOFIN F waterproofing membrane is to be welded over this intermediate fastening.



4.3.3 Intermediate fastening to thermally insulated upstands

A Z-shaped coated metal sheet profile is to be installed half way up the connection height (fastening distance 20 cm). The two-pieces of the connecting membrane are to be welded on to it.

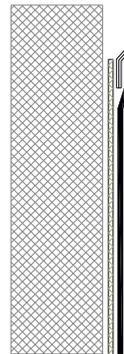


4.4 Flashing on upstands

4.4.1 Flashing with composite sheet

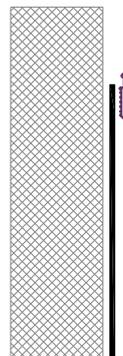
The upper flashing of the connection is created by fitting COSMOFIN coated metal sheet profiles (fastening distance 20 cm), together with joint sealer to prevent any water running behind the profiles using Ceresit F173.

The COSMOFIN vertical waterproofing membrane is then welded in this case to the coated metal sheet profile.



4.4.2 Flashing with clamping profiles

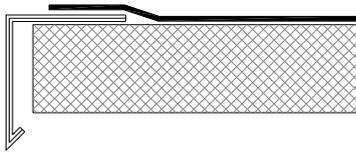
The upper flashing of the connection is created by fitting clamping profiles, together with joint sealer to prevent any water running behind the profiles using Ceresit F173.



4.5 Roof trims

4.5.1 Roof trims for eaves

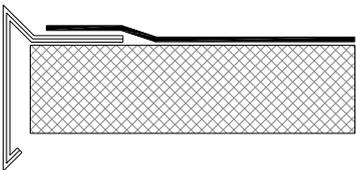
Install COSMOFIN coated metal sheet eave profiles of a suitable form professionally and flush to the external edge of the building (fix the horizontal arm every 15 cm). Weld the COSMOFIN FG waterproofing membrane from the surface of the roof onto the horizontal leg and over the fastening points on the leg.



4.5.2 Roof trims with COSMOFIN coated metal sheet profiles

Install COSMOFIN coated metal sheet verge flashing profiles of a suitable form professionally and flush to the external edge of the building (fix the horizontal arm at least every 15 cm). Depending on the height of the building and/or the height of the cover plate, it may be necessary to install wind tape or continuous flashing.

Weld the COSMOFIN FG waterproofing membrane that runs to the edge of the building onto the horizontal leg and over the fastening points on the leg.



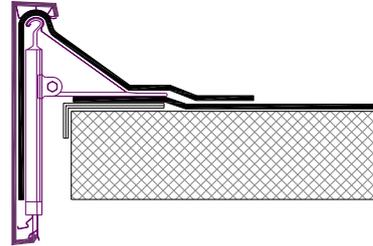
4.5.3 Roof trims with multi-piece metal clamping profiles

Install COSMOFIN coated metal sheet brackets (e.g. 3/7cm) professionally and flush to the external edge of the building (press the 3 cm high vertical arm to the exterior of the building and fasten the 7 cm wide horizontal arm at least every 25 cm).

Weld the COSMOFIN FG waterproofing membrane that runs to the edge of the building onto the horizontal leg and over the fastening points on the leg.

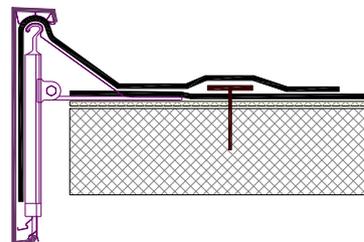
Install the basic structure of the multi-piece metal clamping profile onto at least 3 mm thick NEOPRENE discs according to the manufacturer's instructions so that the screw protrusions cannot cause any leaks in the waterproofing (also install rigid waterproof plates between the screw head and the profile mount).

Clamp the strip of COSMOFIN FG designed to hang in the profile in place using the corresponding mechanism and weld the free section of the waterproofing membrane.



In the case of existing multi-piece metal clamping profiles immediately in front of the basic structure of the clamping profile, fasten a strip of COSMOFIN coated metal sheet (cut to a length of 7 cm, 2-sided 1 cm, bent to 180°) into the substructure at least every 20 cm along the COSMOFIN waterproofing membrane that runs to the profile.

Clamp the strips of COSMOFIN FG designed to hang in the profile in place using the corresponding mechanism and weld together the free section of the waterproofing membrane and the strips of coated metal sheet.



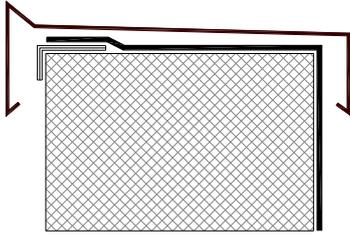
4.5.4 Roof trims with wall capping profiles

Install COSMOFIN coated metal sheet brackets (e.g. 3/7cm) professionally and flush to the external edge of the building (press the 3 cm high vertical arm to the exterior of the building and fasten the 7 cm wide horizontal arm at least every 25 cm).

Weld the COSMOFIN FG waterproofing membrane that runs to the edge of the building onto the horizontal arm and over the fastening points on the arm.

Install the wall capping profile mount onto at least 3 mm thick NEOPRENE discs according to the manufacturer's instructions so that the screw protrusions cannot cause any leaks in the waterproofing at the top of the parapet (also install rigid waterproof plates between the screw head and the profile mount).

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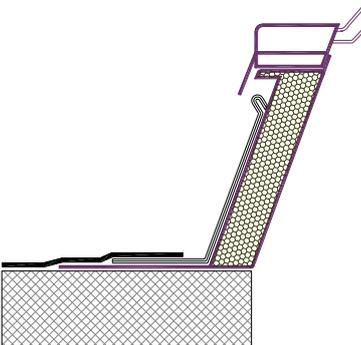
5 Enclosing the bases for skylights

5.1 Enclosing with COSMOFIN coated metal sheet profiles

Fit COSMOFIN coated metal sheet profiles, bent 3 times, to the vertical or slanting base. Cut the outer edges to length where required. Apply a strip of elastic joint sealer of type Ceresit F173 onto the primer coating on the upper edge of the base, press the COSMOFIN coated metal sheet profile into the joint sealer and fix the at least 90 mm wide horizontal arm using fastening elements suitable for the respective substructure every 150 mm through the horizontal flange of the base.

Seal the faces and corners of the profile with 50 mm wide WITEC separating strips and weld 150 mm wide strips of COSMOFIN F over them.

When the base for the skylight is fitted with flashing, the vertical or slanting arms are pushed underneath or clamped in place. If the flashing is rainproof, there is no need for the elastic joint sealer. Weld the COSMOFIN FG waterproofing membrane from the surface of the roof onto the horizontal leg and over the fastening points on the leg.



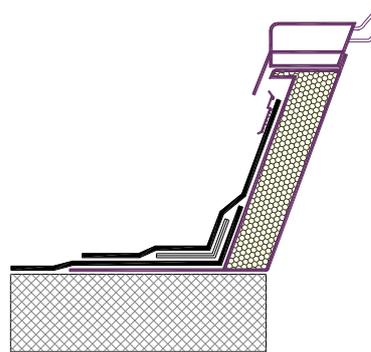
5.2 Enclosing with COSMOFIN FG waterproofing membrane

Run the COSMOFIN FG waterproofing membrane from the surface of the roof approx. 8 cm up the base for the skylight, install linear fasteners in the junction between the roof and the upstand through the horizontal flange of the base for the skylight using fastening elements with countersunk heads that are suitable for the respective substructure.

Cut the COSMOFIN FG connecting membrane to the required length. Apply COSMOFIN contact adhesive to the underside of the membrane and the base for the skylight and allow to air dry.

Correctly align the connecting membrane and stick it down without any creasing to the base for the skylight. Run connecting strips of COSMOFIN FG waterproofing membrane horizontally onto the waterproofing membrane on the surface of the roof and weld together.

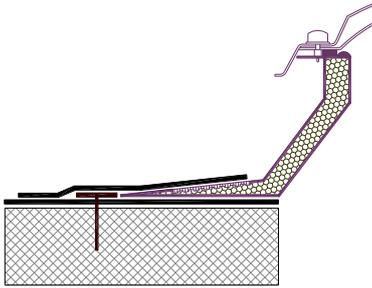
For the upper connection, see section for flashing on upstands.



5.3 Connecting to bases with rigid PVC frames

Type 1: with fastening in the junction between roof and frame

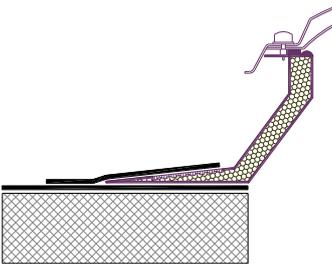
Fix COSMOFIN coated metal sheet profiles (with a single fold) every 150 mm through the waterproofing membrane on the surface of the roof into the substrate at least 20 mm in front of the base for the skylight. The connection to the waterproofing membrane on the surface of the roof is made using a separate strip of COSMOFIN F.



Type 2: without fastening in the junction between roof and frame

Run the COSMOFIN FG waterproofing membrane from the roof up to the edge of the opening for the skylight (opening of the shell construction).

Once the skylight has been installed, weld strips of COSMOFIN F waterproofing membrane (1.5 mm thick) onto the rigid PVC frame and at least 50 mm wide onto the waterproofing membrane on the surface of the roof.



5.4 Enclosing round skylight bases, conical

In the case of 150 mm high bases, produce a sleeve made out of COSMOFIN F (at least 80 mm larger than the largest diameter of the base for the skylight), cut a round opening in the middle (opening approx. 100-200 mm smaller than the upper diameter of the base for the skylight), lay it loosely onto the base and use a low propane gas flame to heat up a section around the base measuring at least 200 mm wide.

Once the edge has been heated so that the thermoplastic is malleable, pull the flange over the base of the skylight and allow it to cool. Tightly wrap a 1.0 mm stainless steel strap around the upper edge and tie in place. Then fold the protruding section of the flange downwards and weld it tightly in place using hot air welding. Apply a strip of elastic joint sealer of type Ceresit F173 onto the primer coating on the upper edge. Wrap a stainless steel strap around the lower edge, as described above, and then initially weld over it every 200 mm using a COSMOFIN F disc, 50 mm, so that it is fixed in position.

Weld the sleeve to the waterproofing membrane on the surface of the roof. Heat up strips of COSMOFIN F, to cover the wire covering, with a low propane gas flame or hot air (which loosens it as a result), allow to cool and professionally weld in place both on the horizontal and also the slanting plane.

In the case of bases higher than 150 mm, cut out trapezoidal segments and weld them together or roughly create a truncated cone with an overlap at the top and bottom, cut to shape, put in place and proceed as previously described. Instead of stainless steel wire, it is also possible to use galvanized steel wire that is coated in plastic.

5.5 Enclosing fans in skylight bases

Enclosing radial or axial fans can only be done using COSMOFIN coated metal sheet profiles, which are sealed with a strip of elastic joint sealer of type Ceresit F173 onto the primer coating and welded together with strips of COSMOFIN F or heat formed flanges.

6. Connecting to drains

The standard method is to connect the COSMOFIN waterproofing membrane to the COSMOFIN stainless steel drainage elements available in the COSMOFIN system. Using this method, the membrane sleeve available from the factory is welded onto or under the relevant COSMOFIN membrane using hot air welding or the WITEC solvent welding agent.

In the case of drainage systems from third party manufacturers (laminated COSMOFIN F sleeve, rigid PVC, loose-fixed flange), the relevant processing guidelines issued by the manufacturer must be observed.

Note: National standards must be observed.

7. Enclosing pipes

The standard method is to connect the COSMOFIN waterproofing membrane to the COSMOFIN stainless steel vent pipes available in the COSMOFIN system. Using this method, the membrane sleeve available from the factory is welded onto or under the relevant COSMOFIN membrane using hot air welding or the WITEC solvent welding agent.

Sealing/enclosing pipes can also be carried out by hand using sections of COSMOFIN F membrane cut to size. The pipe firstly needs to be enveloped with a COSMOFIN F membrane and welded tight in the overlapping areas.

A sleeve of COSMOFIN F membrane or a heat formed flange with an opening in the middle that has been made after warming is pulled over the pipe and the membrane covering and then welded together with the waterproofing membrane on the surface of the roof and the membrane cover around the pipe. The upper flashing is achieved using a hose clamp suitable for the circumference of the pipe and sealed with Ceresit F173 joint sealer.

8. Building expansion joints

Expansion joints are construction joints that need to be carefully taken into account when waterproofing the roof and selecting the roofing layers. The vapour barrier as well as insulation, waterproofing and, where relevant, usable surface layers need to be installed so that they can accommodate movements in all three possible dimensions without causing any damage. Depending on the type and size of the movements, it is necessary to differentiate between Type I joints and Type II joints.

Type I joints

are joints for slow, unique or rare movements

- of 15 mm exclusively vertically to the waterproofing
- of 20 mm exclusively parallel to the waterproofing, although only 10 mm when shearing also occurs in the waterproofing level.
- of 15 mm with a combination of settling and expanding, although only 10 mm when shearing also occurs in the waterproofing level

In these cases, it is possible to run the waterproofing layer across the joint when laying the membrane loosely. If the waterproofing layer is laid directly over the joint, towing strips are to be arranged under the waterproof layer. The towing strips can be omitted if there is an effective separating layer fitted between the waterproofing layer and the substrate. Depending on the range of the movement, the waterproofing membranes are to be supported in the area around the joint.

Type II joints

are joints that are subject to frequent cyclic movement, as well as joints according to Type I where the stated dimensions have been exceeded.

Joints of Type II are to be individually planned in each case and adapted to the local conditions and requirements. Type II joints are generally to be raised out of the water ponding level using insulating wedges or upturned beams. Parts of the roof surface that are separated due to the arrangement of a Type II expansion joint are to be drained independently of one another.

Please contact our Technical Assistance Department when Type II expansion joints need to be created. We will submit a building-specific design proposal that is based on the expected movement and the type of installation used for the waterproofing membranes.

9. Notes

The current COSMOFIN Welding Guidelines are to be observed for the skilled handling of COSMOFIN FG waterproofing membranes and COSMOFIN system parts.

The above information corresponds to the latest technical standards, as is documented, for example, in the German Flat Roof Guidelines for DIN 18531 and DIN 18338. Furthermore, they correspond to our current state of knowledge gained through the development and production of COSMOFIN FG, as well as the findings from the practical use of the product.

Other local conditions or the use of a combination of materials that are not described in these installation guidelines may have an influence on the functionality of the product. Sufficient practical tests should be carried out.

Any fitting of the waterproofing membranes that deviates from these guidelines as a result of changed local conditions or combinations of materials requires our written approval, otherwise we accept no liability for the suitability of our waterproofing membranes for the described applications.

All previous versions become invalid upon publication of these installation guidelines.

If any questions arise, you should seek expert advice.

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