



APPLICATIONS IN WATERPROOFING

The Aquaflex system has two main fields of application: building and lining:

1. Building

- **Roofing**

Light and particularly resistant, the Aquaflex membrane is the most suitable solution for waterproofing, and may be used for various kinds of roofs: flat, curved, with gardens, for new buildings or refurbishing.

- **Façades**

EPDM is more and more popular for this application. Easy to work with, and exhibiting exceptional ageing properties, this material is unanimously appreciated by building professionals.

- **Underground constructions**

Aquaflex membranes provide the general contractors with attractive waterproofing solutions, easy to install, free of maintenance, and ensuring an unbeatable quality.

- **Expansion joints**

Flexibility and resistance of EPDM polymer allow obtaining a flat and tight joint in all circumstances, whatever the constraints resulting of the movements of surrounding structures.

2. Lining

- **Garden ponds**

The versatility of the Aquaflex waterproofing system allows providing tailor-made solutions for the most unusual and irregular shapes of the stretch of water. Since no chemical is released during the whole service life, no harm can be done to the neighbouring ecological system.

- **Geomembranes**

Waterproofing tunnels, lining engineering structures, reservoirs or hydraulic works are typical applications for which the EPDM membrane is perfectly suited.

- **Biogas**

EPDM membranes also provide a very attractive solution for biogas storage due to their unique combination of physical versatility and chemical resistance.

1. Physical properties

a. Adaptability to all supports

The Aquaflex membranes are suited for all kinds of roof structures (e.g. concrete, metal deck, timber), most of the usual insulation materials (e.g. EPS, XPS, MW, PUR) and are compatible with existing bitumen layers without any adaptation, or need for geotextile or other protective layer.

b. UV resistance and ageing

The high carbon black content of the membrane ensures UV weatherability all along the expected life of the roof structure.



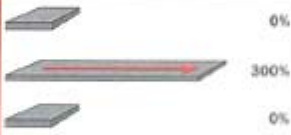


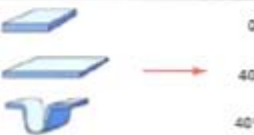
Since the EPDM membrane doesn't contain any plasticizer (like phthalates such as DEHP and di-butyl phthalate), there is no risk of diffusion and evaporation of these additives, resulting in increased brittleness. The membrane properties remain stable, without any loss of elongation or other mechanical properties.

c. Microbiological resistance

The Aquaflex membrane is not subject to microbiological alteration or migration effects due to the contact with organic compounds.

d. Flexibility

EPDM membranes remain flexible in a wide range of temperatures, even in the most extreme conditions:

		EPDM	Thermoplastic materials
At -40° C EPDM is unaffected and flexible, thermoplastics are stiff, brittle and will crack.	-40° C	 0% 300% 0%	 0% 0% 0%
At +150° C EPDM is unaffected, thermoplastics become liquids.	+150° C	 0% 300% 0%	
After decades of flexing, EPDM is unaffected. Thermoplastics become thin and elongated, and eventually will crack.	Elongations due to settlements and movements.	 0% 300% 0%	 0% 40% 40%

e. Conclusions

The outstanding behaviour of EPDM membranes is illustrated in the table below, where EPDM properties are plotted versus average levels of other roofing systems, for a series of 12 different tests.





2. Product information

a. Specification

AQUAFLEX S EPDM

Physical properties	Unit	Requirements	Typical value	Test methods
Hardness	°IRH	60 ± 5	64	DIN 53519 Teil2
Modulus at 300% elongation	Mpa	min 5,0	7,2	DIN 53504
Tensile strength	Mpa	min 9,0	10,2	DIN 53504
Elongation at break	%	min 300	450	DIN 53504
Tear strength	kN/m	min 30	37	DIN 53315
Surface resistance	Ωm	max 10 ⁸	10 ⁷	ISO/FDIS, 1853:1997(E)
Methane gas permeability	cm ³ /m ² /bara/day		<1000	785 DIN 53536
Properties after ageing 168h/121°C DIN 53508				
Tensile strength	Mpa	min 7,5	9,0	DIN 53504
Elongation at break	%	min 300	390	DIN 53504
Brittle point	C°	max. -40	-52	DIN 53545
Additional requirements				
Thickness	Nominal ±10 %			



EPDM S , is a Single-layer EPDM membrane. Conform to the UEAtc guidelines “General Directive for the Assessment of Roof Waterproofing Systems”.

Colour: black
Widths: 1.70 m. & 1.50 m.
Density: 1.18 g/cm ³ .

Width - 1.70 m

Additional physical characteristics of EPDM membranes

Thermal conductivity: $\lambda = 0.17 \text{ W.m}^{-1}.\text{K}^{-1}$.

Electrical resistivity: 10^6 to $10^7 \text{ }\Omega.\text{m}$ (antistatic material)

Vapour diffusion resistance coefficient: $\mu =$ from 79000 to 90000 according to the type of sheet

Specific heat: $c = 1470 \text{ J.kg}^{-1}.\text{K}^{-1}$.

Mechanical properties of the seam

Peel strength: Hot air welding: 3 N/mm

a. Accessories (primers, mastic, etc)

1 Hot Bonding Tape

50mm self adhesive mask, syntactic based with rubber modified polymers, specially formulated for hot air welding overlaps applications.

Characteristics

- thickness (mm): 1 +/- 0.1
- nominal width (mm): 50
- length (m): 10 & 20

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The tape is used to join the EPDM strips together.



2 Aquaflex Primer

FG 35 Primer

FG 35 Primer is a low viscosity solution of synthetic rubber and resins combined with organic, halogen-free solvents. It is intended for use with range of self-adhesive d.p.c., tanking and roof waterproofing membranes.

FG 35 Primer is suitable for use on porous surfaces such as brickwork, concrete, aerated concrete, blockwork and timber etc. All surfaces to be primed must be firm, flat, dry and free from dust and grease. FG 35 is applied to the substrate with a brush or lambswool roller.



- Applications

Protection of underground constructions against surface water infiltration

Damages due to surface water infiltration to underground constructions are quite often reported. Moreover, repairing is generally expensive, and seldom satisfactory.

Infiltrations usually occur in the following circumstances:

- Premises situated above ground water level
- Scarcely permeable soil (e.g. clay or sand clay)
- Masonry walls covered with cement coating, and one or more cold bitumen emulsion layers.

Special attention must be given to the choice of the inside walls coatings. Coating materials that are water-sensitive, or not permeable enough to water vapour must be discarded if a high moisture level is admitted, or present in the walls. So inside coatings or paintings too tight to water vapours may originate an increase of the local water or vapour pressure that they cannot withstand.

Water infiltrations may originate different kinds of damages, such as:

- Deterioration of the internal coating: discolouration, unsticking of the supporting layer.
- Corrosion of metal parts.
- Water and mud puddles.
- Mould formation or deterioration of the goods stored in underground rooms.

Several parameters must be taken into account to estimate the risk of infiltration:

1. Composition of the underground walls

Materials constituting the underground walls widely influence the risk of infiltration. As the case may be, the amount of water adsorbed or infiltrating through the wall may widely vary:

- Concrete is quite tight; risks are therefore relatively low.
- Hollow bricks are much more permeable. It is therefore necessary to take into account their relatively high capillary absorption, as well as possible chemical reactions.
- Walls made of concrete elements are very permeable and therefore require adequate measures.

2. Soil surrounding the building

Only a fraction of the rainwater infiltrates into the ground. Indeed some water evaporates, another part is absorbed by plants, and a last one flows on the ground.

In identical conditions, the more abundant the vegetation surrounding the building, the lower the infiltration flow. As a matter of fact, plants keep a

large amount of water, varying according to the season. Lawns and meadows therefore constitute efficient water flow regulators.

If the surface of the ground surrounding the building is watertight, either naturally (silt, clay) or because of the presence of a cover (terraces, parkings, roads) the amount of water flowing on the surface may be considerable. So

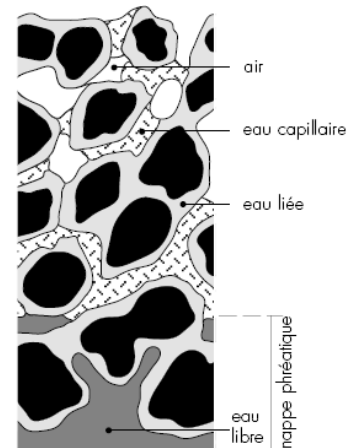
densely build areas may sometimes be flooded in case of heavy rains. Since this

water flow cannot infiltrate into the ground, it flows on the surface. If a building obstructs this flow, the risk of infiltration becomes high.

Water behaviour in the soil layer

Water may be present in the soil under three species:

- Free water may be found in the soil under groundwater level or in local pockets. This water is not bound to the soil through molecular forces or surface tensions.
- Capillary water will be found above groundwater level, up to a height inversely proportional to the pores size.
- Water adsorbed around the grains is fixed on their surface by molecular attraction forces. It can only be removed by means of intense drying or baking.



Permeability

Water circulating speed is linked to differences of potential, but also to the soil characteristics (porosity and granulometry). The permeability of a soil is its ability to allow water to flow through.

Permeability is defined by the following formula:

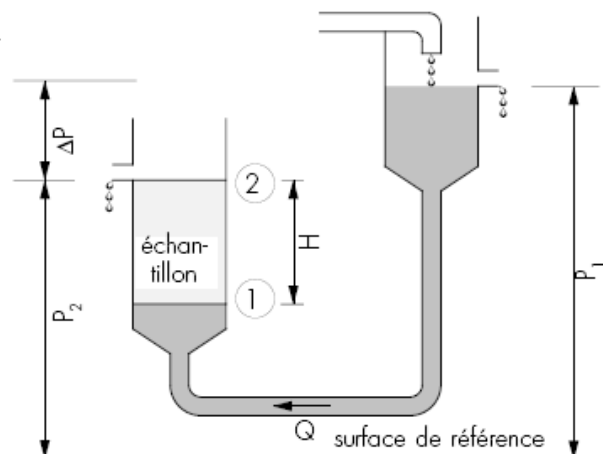
$$Q = k \cdot \Delta P / H \cdot A$$

where:

Q = flow through the sample [m³/s]

k = constant = permeability [m/s]

ΔP = difference of potential between both ends of the sample [m]





H = height of the sample [m]
 A = cross-section of the sample perpendicular to the flow direction [m²]

$\Delta P/H$ is also called hydraulic gradient "i".

The water flow v is given by:
 $v = Q/A = k \cdot i$ [m/s]

Soil type	Permeability [m/s]
Clay	10^{-11} to 10^{-9}
Silt, sand clay	10^{-9} to 10^{-6}
Fine sand	10^{-8} to 10^{-5}
Coarse sand	10^{-5} to 10^{-3}
Gravel	10^{-3} to 10

The permeability "k" corresponds to the flow speed when "i" = 1. The higher the soil permeability, the larger the water flow. The next table provides an order of magnitude for the permeabilities of various soils.

Transmissivity

A drain layer may be placed next to underground walls to protect them against water infiltration. Also in this case it might be important to know the permeability of the material, and particularly the transmissivity "θ" which is the maximum flow that can be evacuated at the surface of the material per meter of wall length and for a hydraulic gradient i = 1.

$$\theta = Q/l = k \cdot i \cdot A/l = k \cdot i \cdot e \text{ [m}^2/\text{s]}$$

$$\text{If } i = 1 \text{ then } \theta = k \cdot e \text{ [m}^2/\text{s]}$$

Fig. 7 Transmissivité.

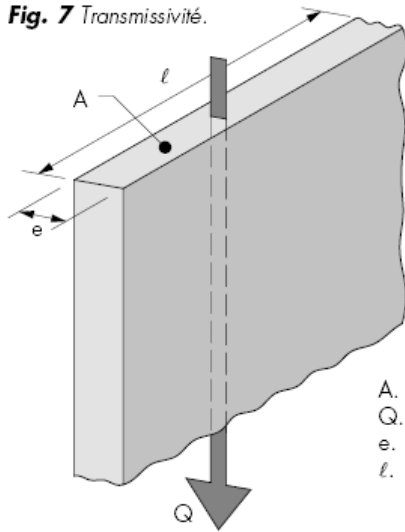
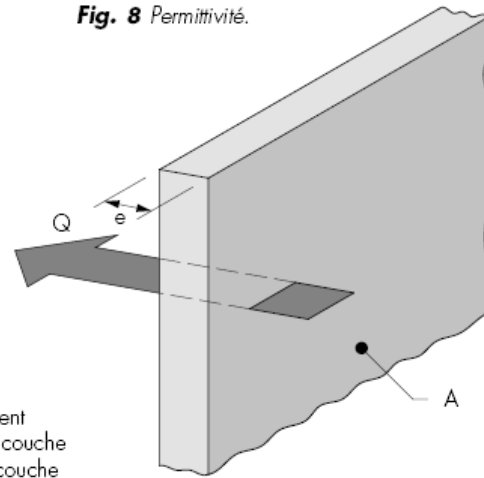


Fig. 8 Permittivité.



A. surface
Q. débit d'écoulement
e. épaisseur de la couche
ℓ. longueur de la couche

Permittivity

In order to avoid sealing of the drain layer, a filter is installed between this layer and the soil, so water flows through the filter to reach the drain. It is therefore important that the permeability perpendicular to the filter surface be sufficient. This permeability, divided by the filter thickness, is called permittivity "ψ".

As previously stated: $Q = k \cdot \Delta P / H \cdot A$

In this case "H" = thickness of the sample in the flow direction = "e".

So $Q/A = k/e \cdot \Delta P = \psi \cdot \Delta P$

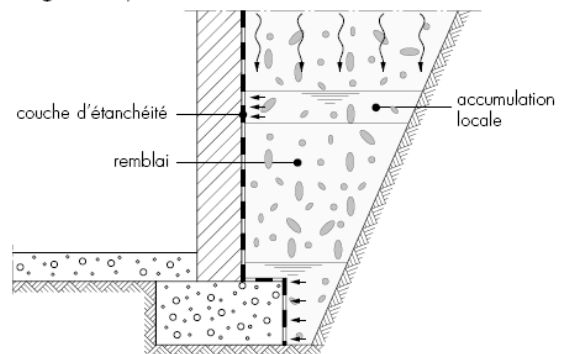
The permittivity is the maximum flow per unit area going through a material in a direction perpendicular to its surface, and for a difference in potential equal to 1.

Selection of a protecting system

To prevent water from getting in underground buildings, there are two different solutions, which may be combined: drainage and waterproofing.

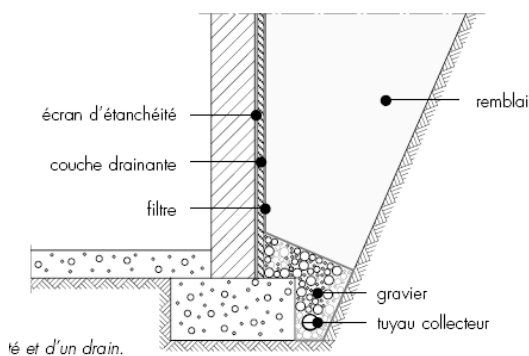
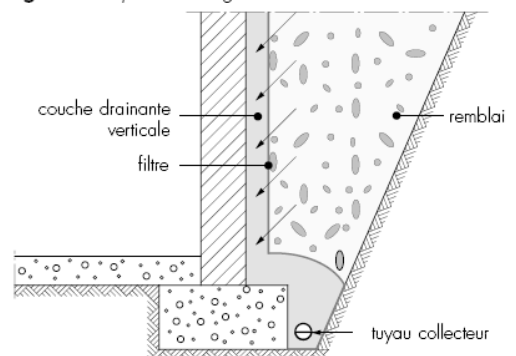
Waterproofing prevents humidity from entering the building. But this may result in a pressure build-up against the membrane. It is therefore necessary to make sure that both the building and the membrane can permanently withstand the maximum expected water pressure. This is particularly important for seals, pipes penetrations and other discontinuities.

Fig. 9 Principe d'étanchéité.



The installation of a draining system allows reducing the pressure build-up. It is however necessary to evacuate the collected water at the lowest point of the system using a pipes network. Moreover, pressure build-ups are still possible if proper operation is not ensured, e.g. if the water flow is too high, or if the draining layer or the collecting network is plugged.

Fig. 10 Principe de drainage.



The Solution offering the best guarantees consists of a tightness membrane combined to a synthetic draining system with an appropriate filtering layer. In this case, the stress exerted on the membrane remains limited, since the water will be evacuated through the drainage system.

Different synthetic materials are used for this application:

- Geotextiles are made of fibres, combined in a textile
- Geomembranes are a continuous film
- Geocomposites are a combination of both.



The main characteristics of the polymers used for geosynthetics are listed below:

Polymer	Specific gravity [kg/m ³]	Melting point [°C]	Tensile strength [N/mm ²]	Elongation at break [%]
Polypropylene (PP)	930	165		
Polyethylene (PE)	970	125	200 to 1300	10 to 70
Polyamide (PA)	1160	260		
Polyester (PES)	1410	260		
EPDM	1180	-	6 to 10	< 300

their physico-chemical resistance is as follows:

- Micro-organisms: good
- Acids and oxidizers: good, except PA (average)
- Bases: good, except PE (average)
- UV: good for EPDM and PES, average for PA, weak for PP & PE.

Geotextiles

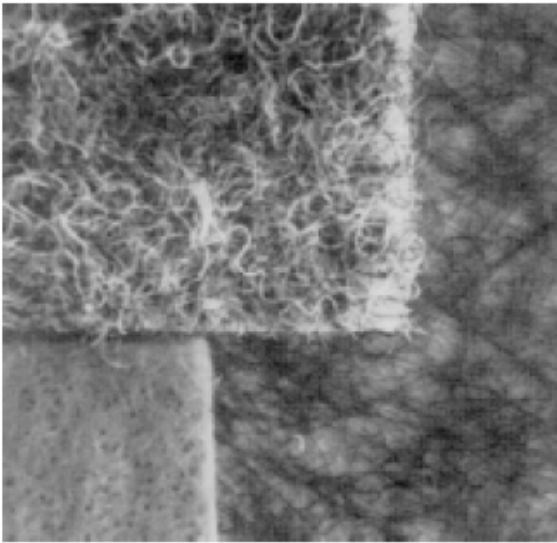
Geotextiles are used for the following applications:

- separation
- filtration
- drainage
- consolidation
- stabilisation

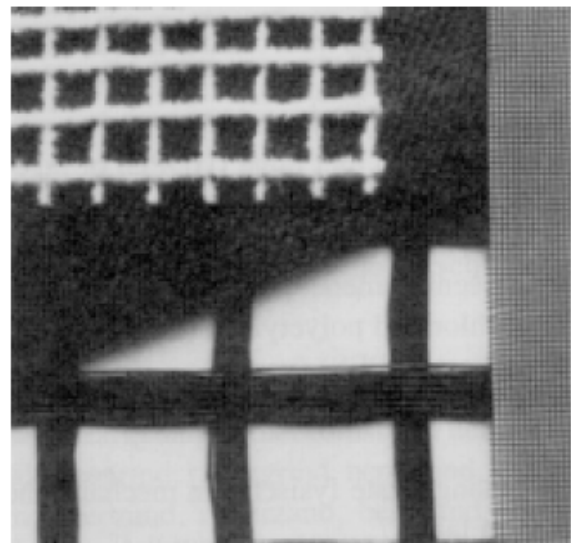
They may be classified into three categories:

- woven
- non-woven: the fibres are randomly dispersed into the material, and bound either mechanically, thermally or chemically.
- mixed: combination of at least two geotextiles, woven or not, mechanically, thermally or chemically bound.

A. GÉOTEXTILE NON TISSÉ



B. GÉOTEXTILE TISSÉ



The main characteristics of the usual geotextiles are as follows:

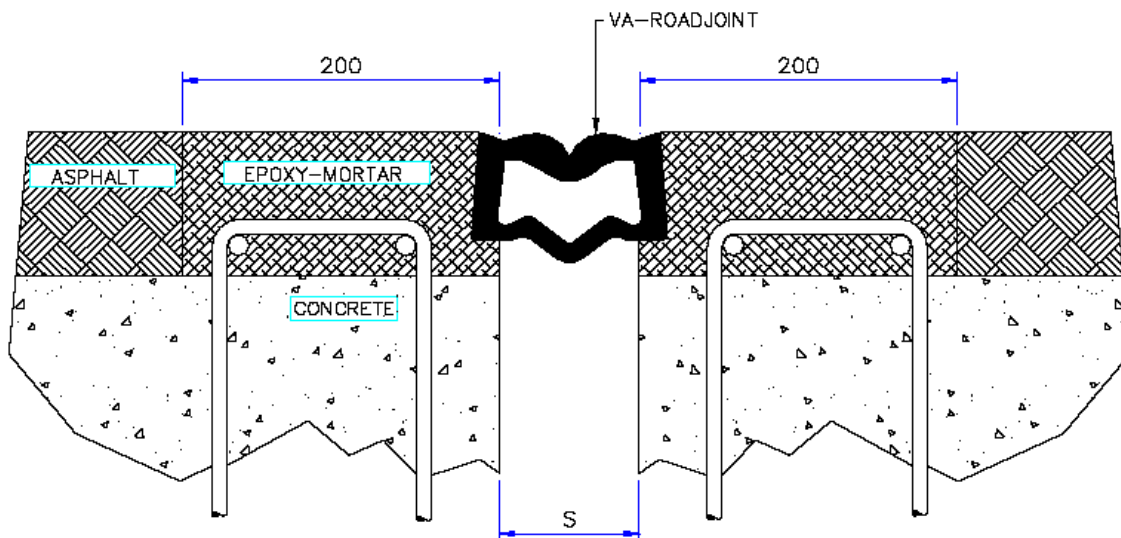
- specific gravity: 100 to 300 g/m² (woven), 100 to 400 g/m² (non-woven).
- thickness: 0.2 to 1.5 mm (woven), 0.2 to 10 mm (non-woven). Geotextiles used for draining purpose are mixed type, with a thickness ranging from 5 to 20 mm.
- tear resistance: 20 to 80 kN/m (woven), 4 to 30 kN/m (non-woven).
- elongation at break: 10 to 35 % (woven), 20 to 80 % (non-woven).
- distance between fibres: 0.05 to 1.5 mm (woven), 0.06 to 0.15 mm (non-woven). This characteristic is important for the filtering properties.
- permittivity: 0.05 to 0.5 s⁻¹ (woven), 0.2 to 2.5 s⁻¹ (non-woven mechanically bound), 0.2 to 2 s⁻¹ (non-woven thermally bound).

3. Expansion joints

As a result of thermal expansion, creep, shrinkage and traffic loading, measurements of constructions can vary. To make this movement possible, several joints can be implemented. The dimensions of the joints vary. To create a flat joint at all times and prevent leakage, an expansion joint is applied. Examples where expansion joints are used are: bridges, viaducts, concrete road surfaces, airfield runways and the innerside of tunnels. The expansion joint can be used in old as well as in new constructions.

a. Use of expansion joints

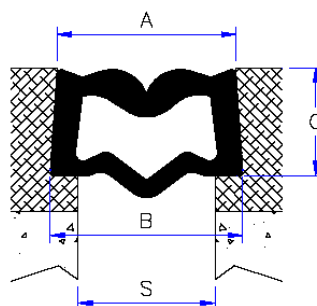
The expansion joint is often used in bridge structures at road level. The expansion joint can absorb the movement of the bridge as a result of temperature changes without any bulge dip or gap in the top surface. In this application the expansion profile is located between epoxy mortar nosings or prefabricated steelworks.



Expansion joints are supplied in a variety of forms. The choice for a joint is made by compression capacity and the dimensions of the expansion gaps.

b. Dimensions of the expansion gap

In the figure below the dimensions of the expansion gap are shown for the VA and ACME profile.





To calculate the expansion gap (S) the following formula is used.

$$\text{Expansion gap (S)} = (S_{\text{max}}) - (0.000012 \times (t + 20) \times L) - (L \times K)$$

S_{max} = Maximum expansion gap at -20 °C [mm]

12×10^{-6} = linear expansion coefficient for reinforced concrete [°C⁻¹].

t = Temperature concrete [°C]

L = Working length span of bridge [mm]

K = Factor for creep and shrinkage of concrete [-]

- Concrete between 3 and 12 months : K=0,00014

- Concrete older than 1 year : K=0

Temperature range from -20 till +40 °C ($\Delta t = 60^\circ\text{C}$).

c. Rubber quality

The expansion profiles are manufactured under strict quality standards. Our production procedures are certified according to ISO 9001 standard. Standard the expansion profiles are made in rubber quality EPDM 60-70 degrees Shore A. On request quality certificates can be shown. EPDM has a good resistance against a.o. weather influences and salt.



Guarantees

The production at our plant is focusing on exacting quality control through the entire process.

The manufacturing is completely traceable from a specific panel on site back to individual product data of the actual rubber compound used in production.

Our operations are driven according to ISO 9001 and ISO 14001.

= = =

In accordance with legal clauses, we guarantee Aquaflex waterproofing membranes and accessories towards above company for a duration of twenty years, namely their:

- waterproofness
- life time
- resistance to root protection

= = =

In so far as in case of justified claim, the waterproofing membrane will be repaired or, if we consider it necessary, replaced free of charge, to the exclusion of other claim.

Guaranties will apply on condition that the membrane was placed according to the installation book, to the Aquaflex laying instructions and to the building's physical rules regarding roofs and with the use of adhesives and accessories belonging to the Aquaflex system.

The manufacturer has a civil liability insurance for an amount of five million euros covering damage originated in a defective membrane.

The guarantee is subject to compliance with the terms shown in our certificate.



Method of Application
For
ROOF WATERPROOFING

1.Scopes of work: This outline Method of Statement includes general waterproofing to roofs

2.Materials:

Item Description

Product

1.EPDM waterproofing Membrane
2.Primer
3.Over lapping (jointing) tape .

Aquaflex standard -1.2mm
FG35 Primer
Tape 50 mm

3.Safety

Follow all safety requirements of project in respect to handling of Materials
As electrical hot air gun is used to weld , follow the required safety measure.
Most of products like primer , adhesives etc are solvent based and highly inflammable.
Therefore should be kept away from naked flames.
Work area should be well ventilated & keep all containers close to prevent inhalation

4. Quality:-

Follow all QA/QC procedures as applicable.
Take adequate measure to protect installed system from abuse by other trades/activities.
Take necessary approvals for surface preparation



5. Installation :-

Fully bonded with hot bitumen

Horizontal application

Substrate :

- The substrate must be flat, sound, dry and clean.
- The delamination strength of the substrate must be satisfactory.
- Substrate by softening method: the new or existing bituminous underlayer must contain 1.0 kg/m² of bitumen above any reinforcement; if less, more bitumen should be applied to achieve this figure.
- Substrate by pour method: substrate should be good for bonding with hot bitumen. If not, the substrate needs to be pre-treated with a bituminous layer and dried according to the instructions of the supplier.

Fixing System:

Pour method

- EPDM membrane sheets should be unrolled and aligned with laps of at least 80 mm.
- At the roof edges, sheets should be laid with a 80 mm upturn.
- Roll back each end of the EPDM membrane sheet to the centre of the roll.
- for a 100 % adhering, pour hot bitumen in front of the roll (1.5 kg/m²)
- Leave laps free of bitumen



- Repeat this operation for the other half of the sheet.

- Apply Primer FG 35 to the edge of both membranes over a width of 8 cm, by brush or lamb wool roller. Allow to dry at least 35 minutes.
- Laps to be heat-welded over a width of at least 5 cm. Hot air temperatures should be between 330°C and 400°C (see applying method of welding).
- Creases may occur if the EPDM membrane is not 100 % bonded next to the laps. In this case, the overlap should be pre-welded with the hot-air gun.



Vertical application semi bonded

The membrane can be installed by two different methods of bonding. The applicator shall follow the consultant's recommendation to determine method of bonding.

1. Apply the adhesive to grid patches to minimum 40% of the membrane surface area.
2. Unroll membrane, position and align as to be fixed. Fold back half the width of the membrane
3. Apply Bonding Adhesive evenly, without puddles, with plastic spatula or, radiator roller, to the folded back sheet and corresponding substrate at a coverage rate of 1 square meter to 1kg.
4. Allow adhesive to dry until it is tacky, but will not stick to a dry finger touch (approx.10 minutes, but in very high temperature up 20 minutes).
5. Flip the coated membrane into the coated substrate while avoiding wrinkles.
6. Brush or roll down bonded sheet with a brush or roller to achieve maximum contact.
7. Fold back the second half of the sheet. Repeat the same application.
8. Install adjoining sheets in the same manner, lapping edges a minimum of 7 cm.
9. Apply Primer FG 35 to the edge of both membranes over a width of 8 cm, by brush or lamp wool roller. Allow to dry at least 35 minutes.
10. Apply the tape in the overlap
11. Laps to be heat-welded over a width of at least 50 mm. Hot air temperatures should be between 330°C and 400°C (see applying method of welding).



Corners

Internal and External wall corners (two walls), Internal and External floor to wall corners (one wall & one floor), Internal and external two walls corner to floor corner(three point corner), are all treated with the same method with relation to the applicable description.

A. Walls Internal & External (two walls).

- If laying of membrane started at a corner:
 1. The corner must be clean and damp free (dry).
 2. Apply method of vertical application
 3. Termination at the same corner should be overlapped with minimum of 8 cm.
 4. Apply method of welding.
 5. In addition, a strip of 25 cm wide should be applied to the length of the corner joint.
- If while applying vertical application and a corner comes in the way of the width of a membrane, the application of vertical method will apply to this corner, only at the lower corner where Three point corner method will apply.

B. Walls to floor Internal & External (one wall & one floor).

1. The corner must be clean and damp free (dry).
2. After applying method of vertical application, a length of minimum 20 cm to be added to the vertical membrane length , to allow for horizontal termination with the horizontal membrane,
3. Termination at corner should be overlapped with minimum of 8 cm, the horizontal membrane should overlap above the 20 cm vertical extension.
4. Apply method of welding.

C. Three point corner (Internal corner)

1. The corner must be clean and absolutely damp free (dry).
2. Find the three pint corner center, and mark the corresponding location on the vertical membrane, a minimum of 20 cm to be added to the vertical membrane length, to allow for horizontal termination with the horizontal membrane.



3. Bend the membrane at the mark, 180 degrees; match the membrane faces of the 20 cm lengths.
4. Measure 2 cm or (thumb width) from the mark, with scissors cut in curve starting motion a triangular piece of 45 degree to both pieces to the end of the 20 cm lengths.
5. Apply FG 35 primer to 5 cm of one upper side and to the other lower side of the 20 cm lengths. Allow to dry at least 35 minutes.
6. Push the membrane at mark to the corner center, overlap the sides of the triangular shape void, apply Resitape, and weld with hot air applying method of welding.
7. Cut a patch 25cm diameter, mark the center of the patch, fold into half, from the center mark measure 2 cm or (thumb width), with scissors cut in curve starting motion 1 cm width along the bent part of the patch..
8. Apply FG 35 primer to 15 cm of the three corner sides, Allow to dry at least 35 minutes.
9. Position the patch center to the corner center, with patch cut void towards up, press the patch firmly against the corner. Weld with hot air applying method of welding.

Three point corner (External corner)

1. The corner must be clean and absolutely damp free (dry).
2. Find the three pint corner center, and mark the corresponding location on the vertical membrane, a minimum of 20 cm to be added to the vertical membrane length, to allow for horizontal termination with the horizontal membrane.
3. Bend the membrane at the mark, 180 degrees; match the membrane faces of the 20 cm lengths.
4. Measure 2 cm or (thumb width) from the mark, with scissors cut in curve starting motion 1 cm width along the bent part of the 20 cm lengths.
5. Apply FG 35 primer to the lower side of the 20 cm lengths, Allow to dry at least 35 minutes. Apply Resitape to the entire section of the 20 cm lengths.
6. Push the membrane at mark to the corner center, overlap the 20 cm lengths to the horizontal membrane, and weld with hot air applying method of welding.
7. Cut a patch 25cm diameter, mark the center of the patch, fold into half, from the center mark measure 2 cm or (thumb width), with scissors cut in curve starting motion 1 cm width along the bent part of the patch..



8. Apply FG 35 primer to 15 cm of the three corner sides, Allow to dry at least 35 minutes.
9. Position the patch center to the corner center, with patch cut void towards up, press the patch firmly against the corner. Weld with hot air applying method of welding.

Membrane Overlap & Joint and method of Welding

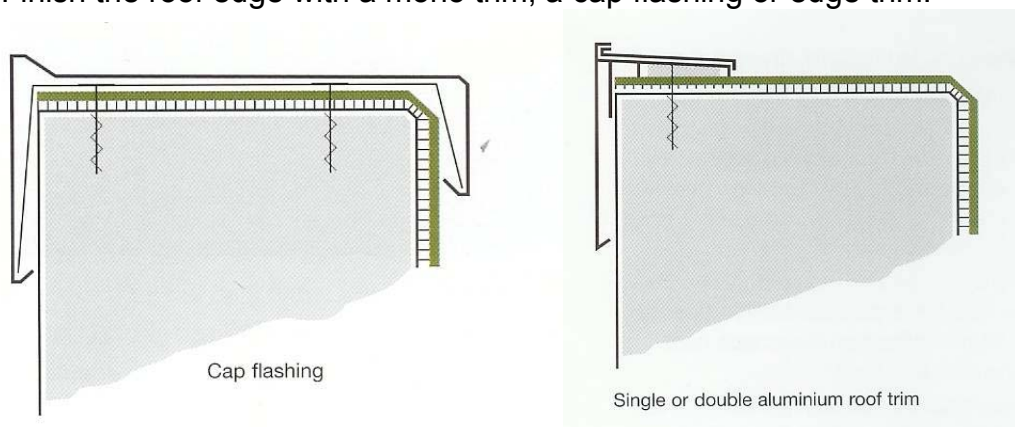
1. Membrane overlap should be a minimum of 7 cm.
2. Mark at 7 cm from the edge of the undermost membrane with white or yellow marker.
3. Unroll second membrane, position and align it to the marks on the first membrane.
4. Fold back the uppermost membrane lengthways.
5. Remove dirt and excess dust from the mating surfaces of the overlapping membrane sheets by wipes or a clean rag. To remove accumulated dirt, footprints, etc., scrub the membrane sheets with warm water and rinse with clean water.
6. Apply Primer FG 35 to the edge of both membranes over a width of 8 cm, by brush or lamb wool roller. Allow to dry at least 35 minutes.
7. When it is necessary mark again the undermost membrane at 7 cm from the edge.
8. Applying Resitape; peel of the polyethylene backing from the tape and allow the exposed tacky surface to fall freely into place along the marks, without stretching or wrinkling it.
9. Press the tape down uniformly with a silicon roller.
10. Fold back the uppermost membrane with an overlap of 7 cm. Press the overlap next to the Resitape with a silicon roller, so that the membranes will stick to each other next to the Resitape

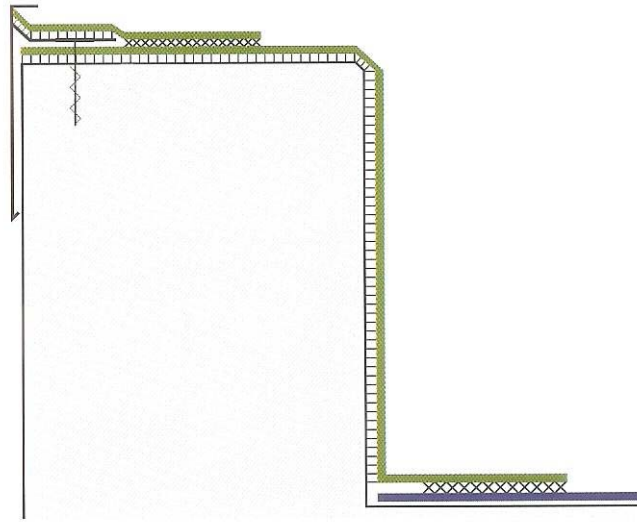
11. Lift the overlap and remove the paper backing from the Resitape partly.
12. Laps to be heat-welded over a width of at least 50 mm. Hot air temperatures should be between 330°C and 400°C. The nozzle of 4 cm must be positioned completely under the lap.
13. The silicon compression roller should be applied at an angle of 45° near the edge and be rolled backward and forward over the entire width of the overlap.
14. During the welding a bleed-out of 2 till 4 mm must come out of the overlap.
15. At all times weld away from seams already welded and not towards them, this can lead to formation of creases.
16. The voids between the three sheets must be completely filled with Resitape.
17. Creases in the welded lap must be avoided. If there is a crease in the lap, weld a patch of 20 cm or a strip over it.

DETAILS

Roof edge finishing

- The substrate must be flat, sound, dry and clean.
- The substrate must be coated fully with FG 35.
- Place a strip of EPDM membrane lengthwise (as long as possible) and bond it to the top of the roof parapet. Check the adhesion of the sheet.
- The strip should extend down the parapet and overlap at least 100 mm onto the EPDM membrane on the flat roof area.
- Laps should be heat-welded over a width of at least 50 mm (40 mm nozzle).
Applying method of welding.
- Finish the roof edge with a mono trim, a cap flashing or edge trim.

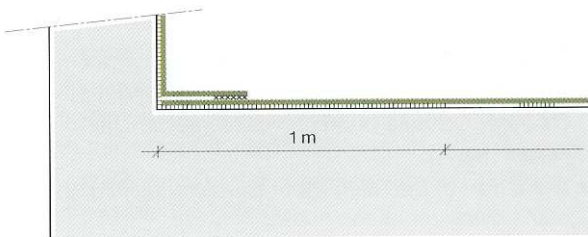




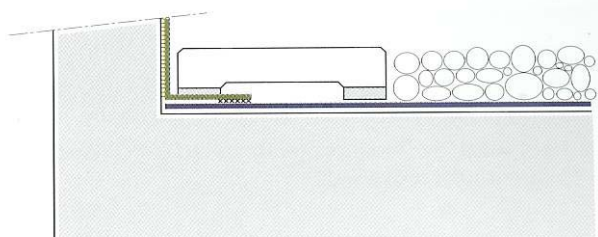
Roof edge profile with slanting upstand

Upstands

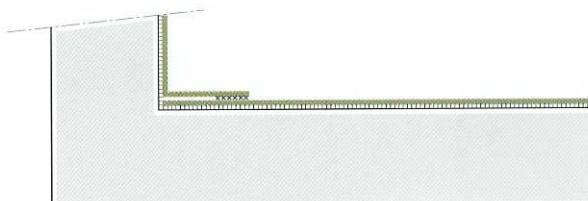
- The substrate must be flat, sound, dry and clean.
- The substrate must be coated fully with FG 35.
- Place a strip of EPDM membrane lengthwise (as long as possible) along the top line of the upstand and bond it to the vertical surface and pressing the sheet down uniformly. Check the adhesion of the sheet.
- The strip should extend down the upstand and overlap at least 100 mm onto the EPDM membrane on the flat roof area (150 mm where an automatic heat welding machine is to be used).
- Laps should be heat-welded over a width of at least 50 mm (40 mm nozzle). Applying method of welding.



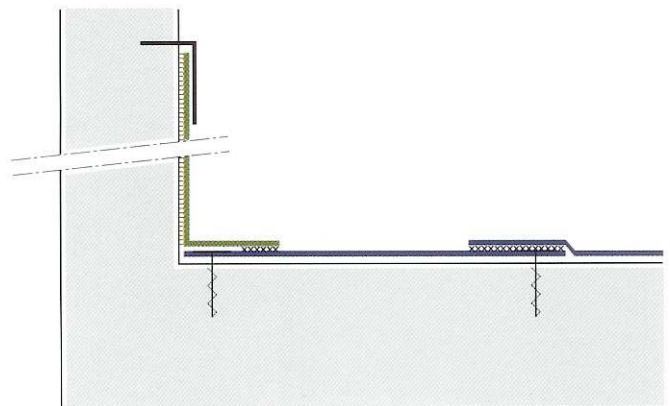
Partially bonded



Loose laid with ballast



Fully bonded

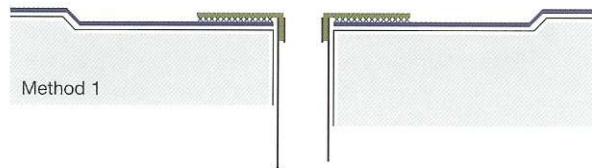


Mechanically fixed

Rainwater outlets

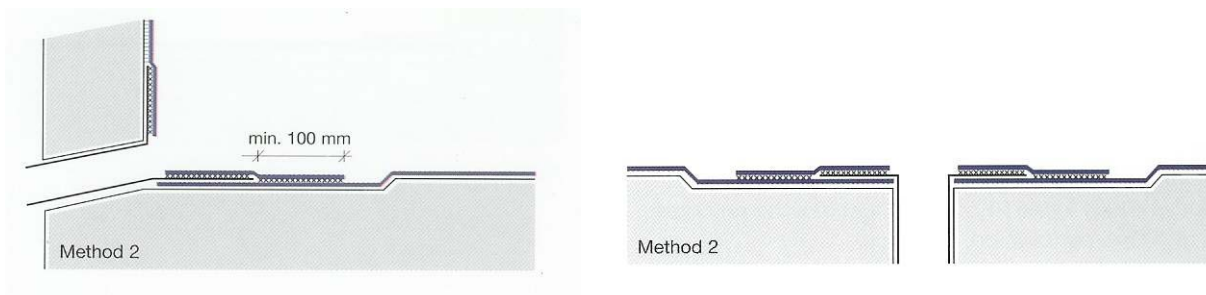
Method 1: Prefabricated RWO

- Wherever possible, form a sump maximum 10 mm deep with an area of at least 0.5 m² (700 x 700 mm) around the downpipes Chamfer edges neatly.
- Heat-weld the prefabricated RWO flange fully onto the roof sheet.



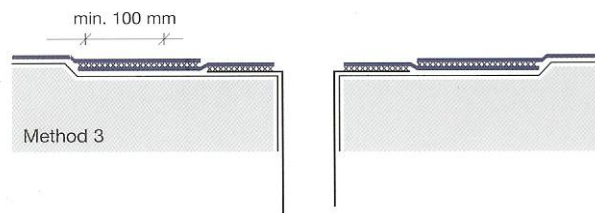
Method 2 :

- Standard metal (eg aluminium or lead) rainwater outlet.
- Wherever possible form a sump at least 0.5 m² (700 x 700 mm) around the downpipes. Chamfer edges neatly.
- Cut a hole in the membrane sheet already laid, the same diameter as the outlet.
- Thoroughly de-grease the top flange of the metal outlet with thinners and prime with bituminous primer or FG 35.
- Cut a membrane flashing with an overhang of 100 mm all around and heat-weld carefully onto the metal flange.
- Insert the metal outlet into the hole cut and heat weld the membrane flashing carefully onto the surrounding membrane sheet.



Method 3

- Wherever possible, form a sump at least 0.5 m² (700 x 700 mm) around the downpipes. Chamfer edges neatly.
- Thoroughly degrease the top flange of the metal outlet with thinners and prime with bituminous primer or FG 35.
- Cut a EPDM membrane flashing with an overhang of 100 mm all around and heat-weld carefully onto the metal flange.
- Cut an opening in the EPDM membrane roof sheet to accommodate the size of the metal outlet flange, then fold back the roof sheet.
- Insert the metal outlet complete with EPDM membrane flashing into the hole cut
- Relay the EPDM membrane roof sheet and heat-weld onto the EPDM membrane flashing.
- Seek advice from Aquaflex Technical Services Department on applications using plastic rainwater outlets.

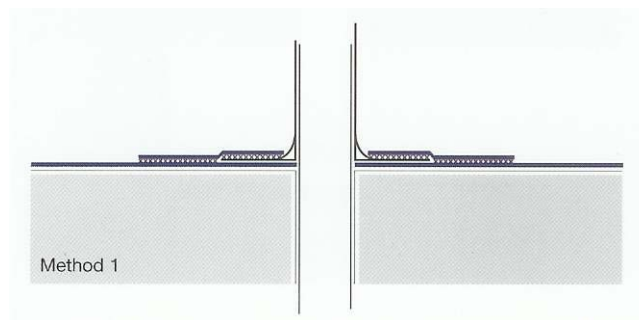




Roof penetrations

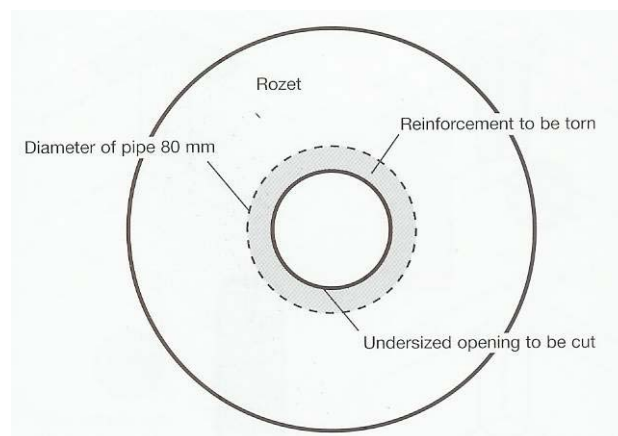
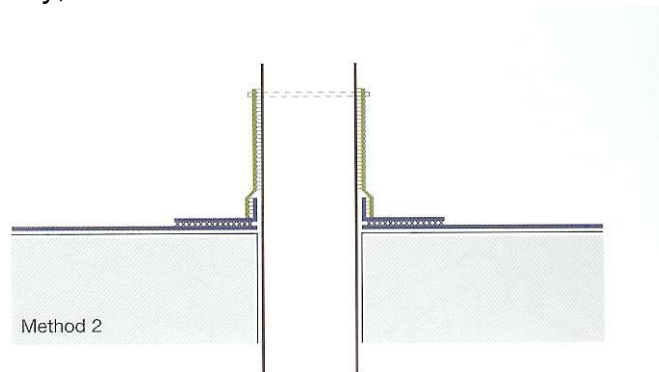
Method 1 (metal sleeve with base flange)

- Cut a hole in the EPDM membrane sheet to accommodate the pipe/penetration.
- Thoroughly degrease the metal base flange with thinners and prime with bituminous primer or FG 35.
- Cut a EPDM membrane flashing with an overhang of 100 mm all around and heat-weld carefully onto the metal base flange.
- Apply the metal sleeve over the pipe/penetration and heat-weld the EPDM membrane flashing onto the surrounding EPDM membrane sheet. Applying method of welding.



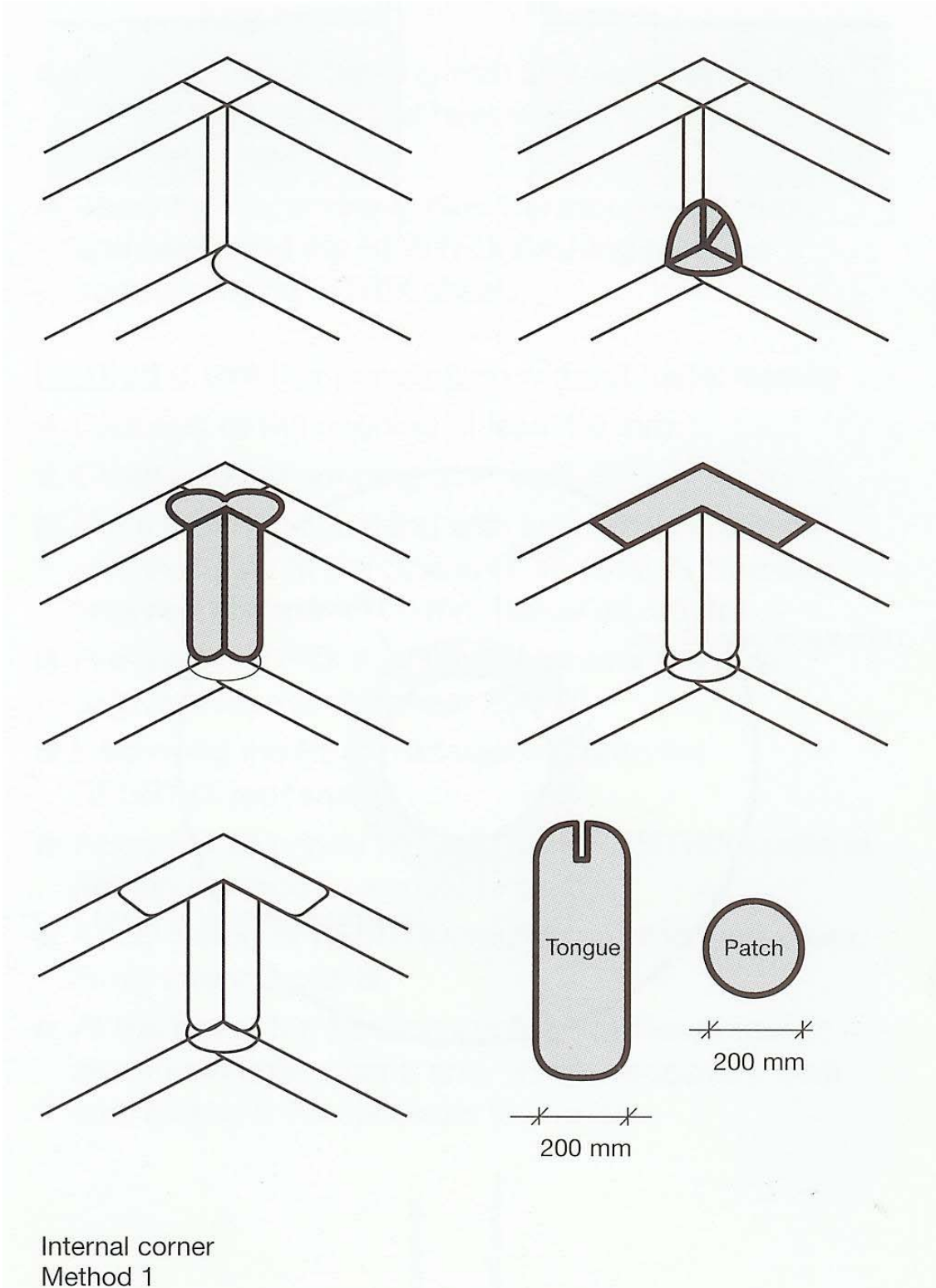
Method 2 (circular penetration without metal sleeve)

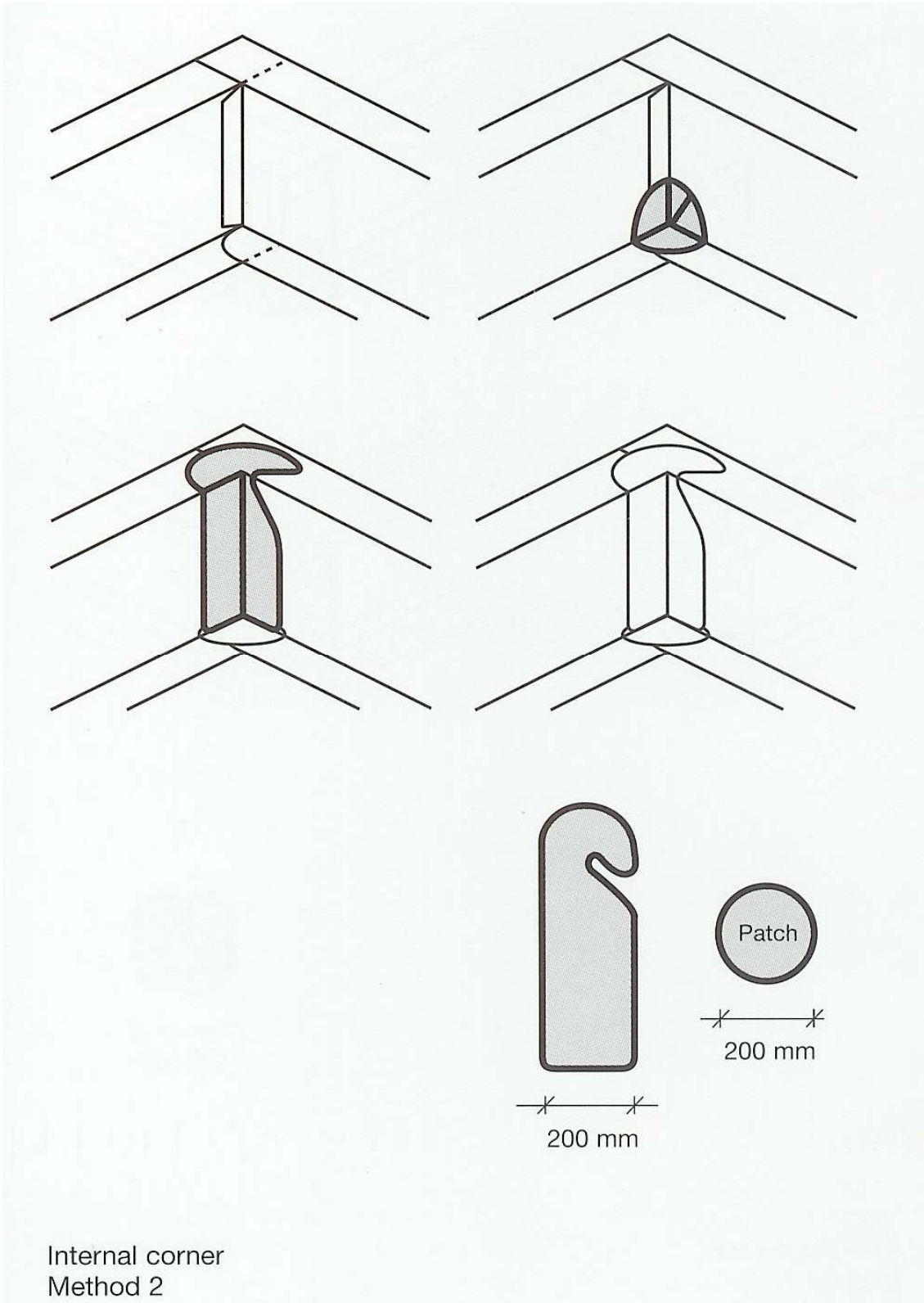
- Diameter of the opening at least 80 mm.
- Clean existing opening thoroughly.
- Cut a EPDM membrane flashing with an internal diameter less than that of the pipe and an outside diameter to give a minimum 100 mm flange all around.
- Pull the EPDM membrane flashing tightly over the pipe to give an upstand at least 20 mm
- Heat-weld the EPDM membrane flashing onto the EPDM membrane roof sheet.
- Apply FG 35 primer to the 20 mm EPDM membrane upstand and up the pipe to a suitable height.
- Apply a strip of EPDM membrane round the pipe, and press firmly into the primer.
- At the top of the flashing apply a stainless steel or aluminium hose-clamp and, where necessary, seal with mastic if the substrate is uneven.



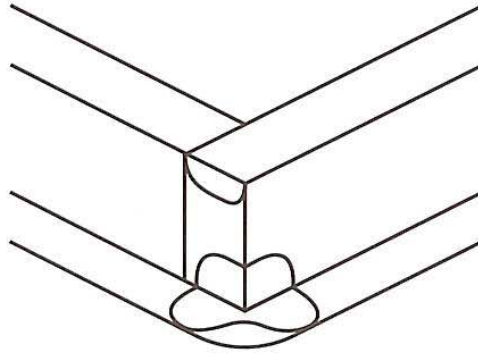
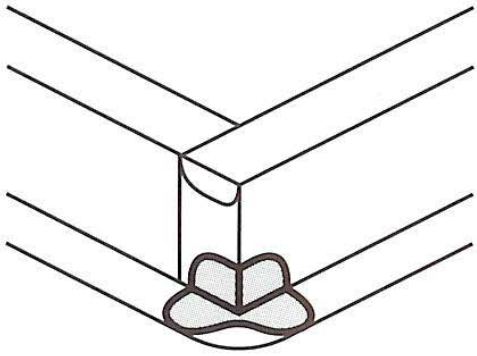
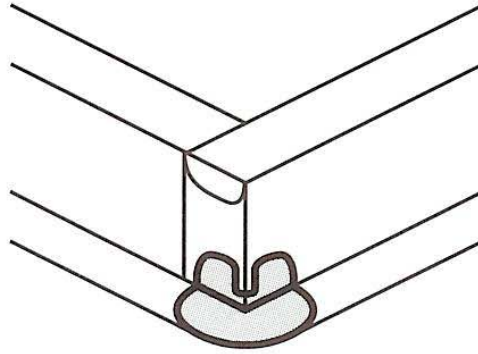
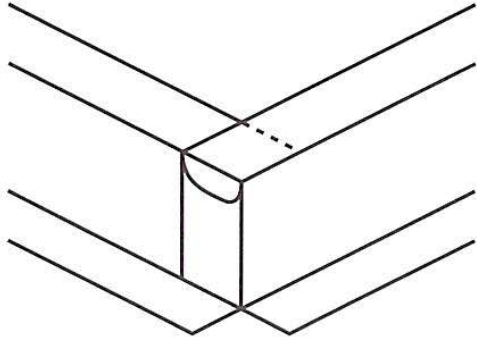
Corner details

Internal and external corners must be finished with patches (tongues and patches). The diameter/width of these fittings should be approximately 200 mm.



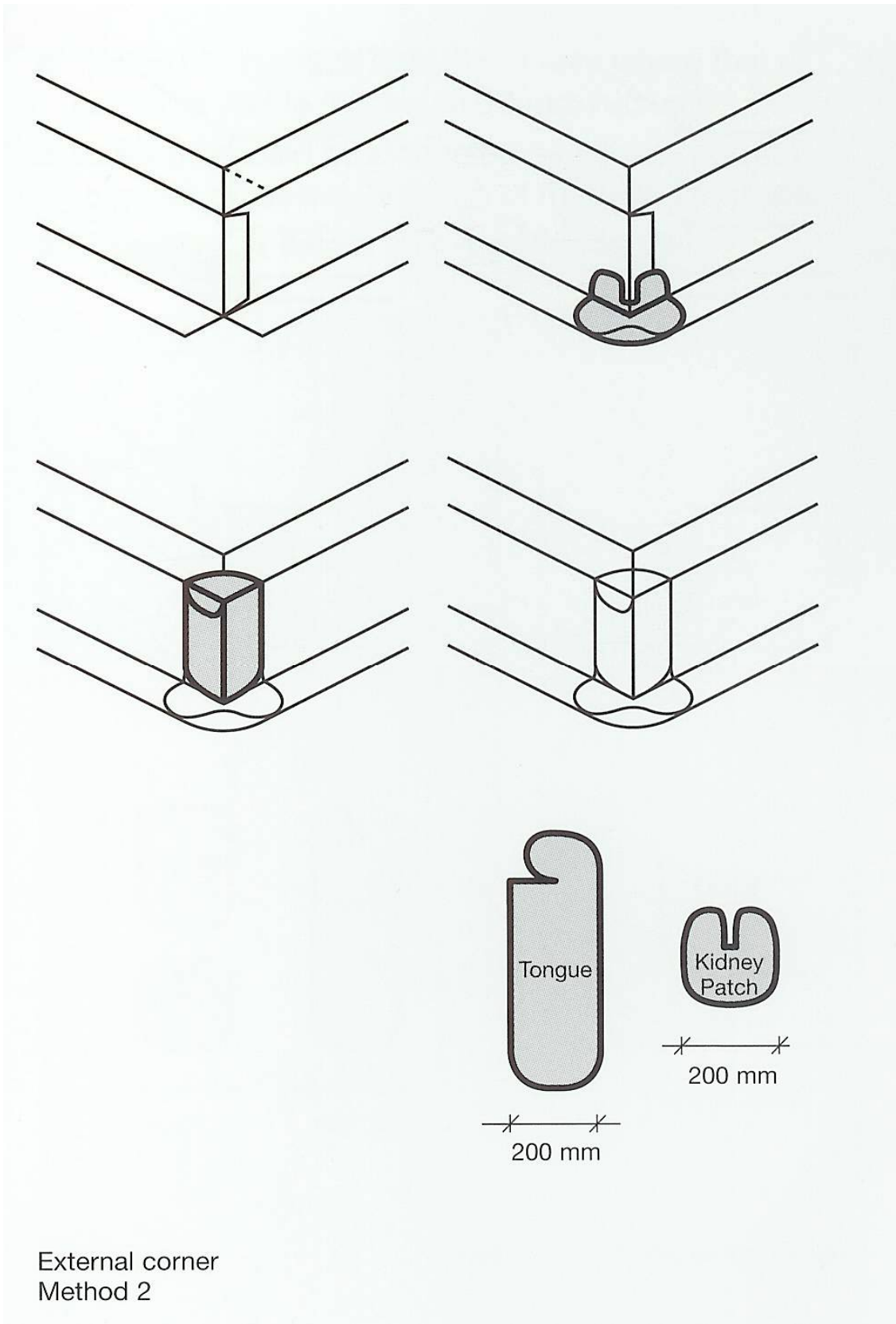


Internal corner
Method 2

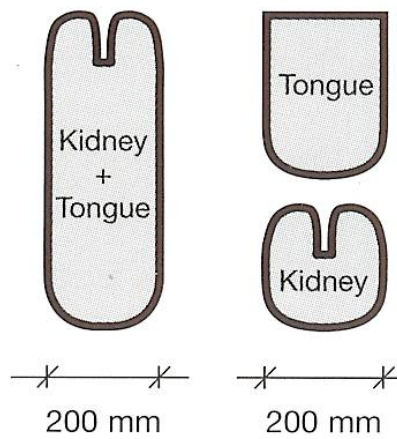
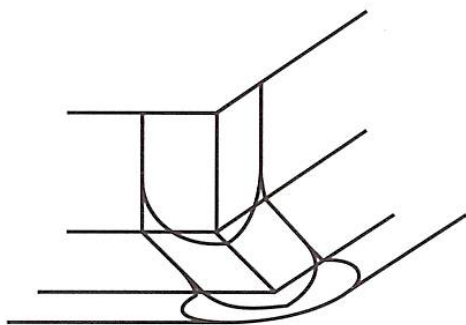
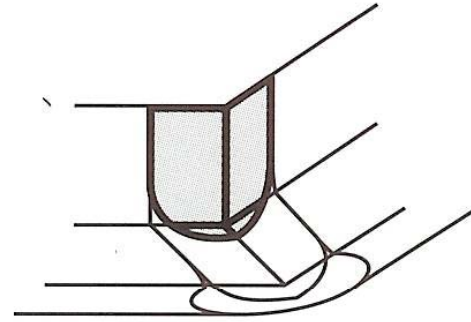
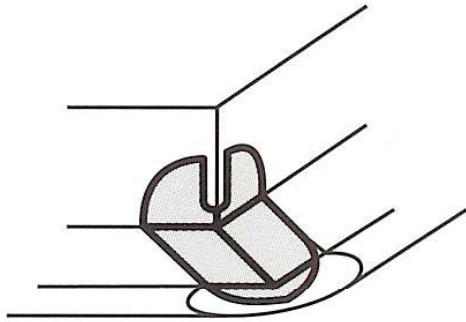
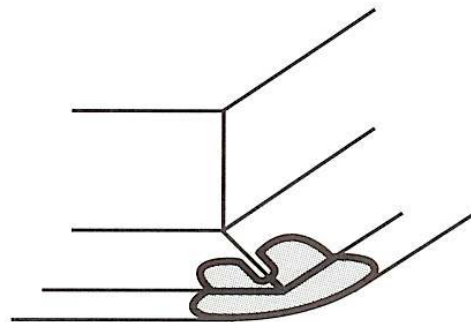
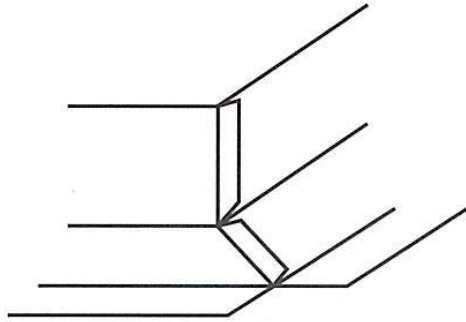


—*—*—
200 mm

External corner
Method 1



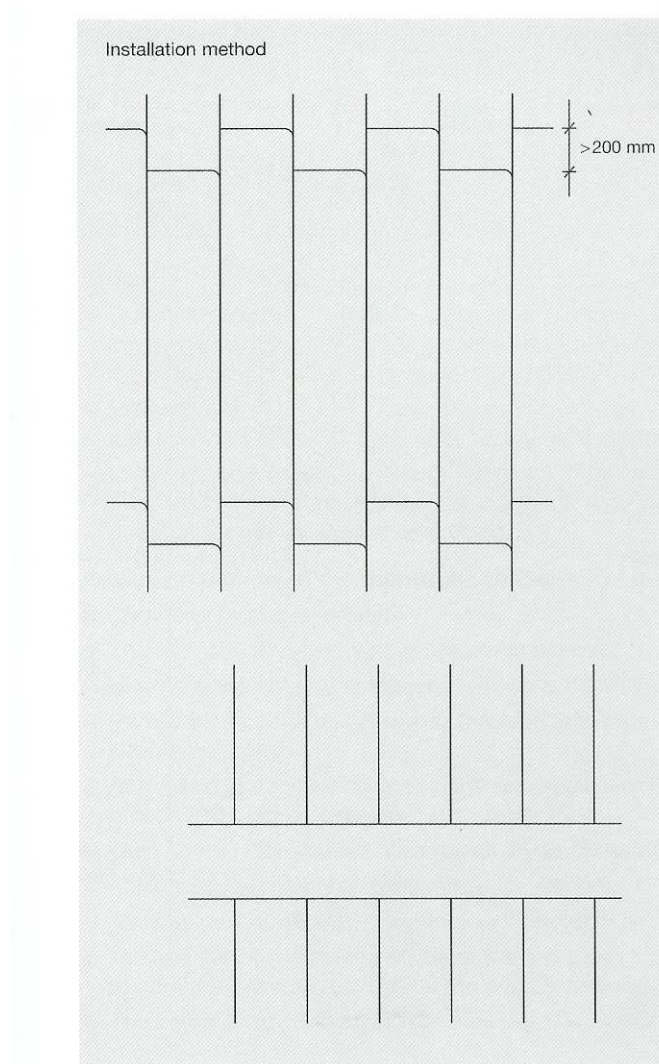
External corner
Method 2

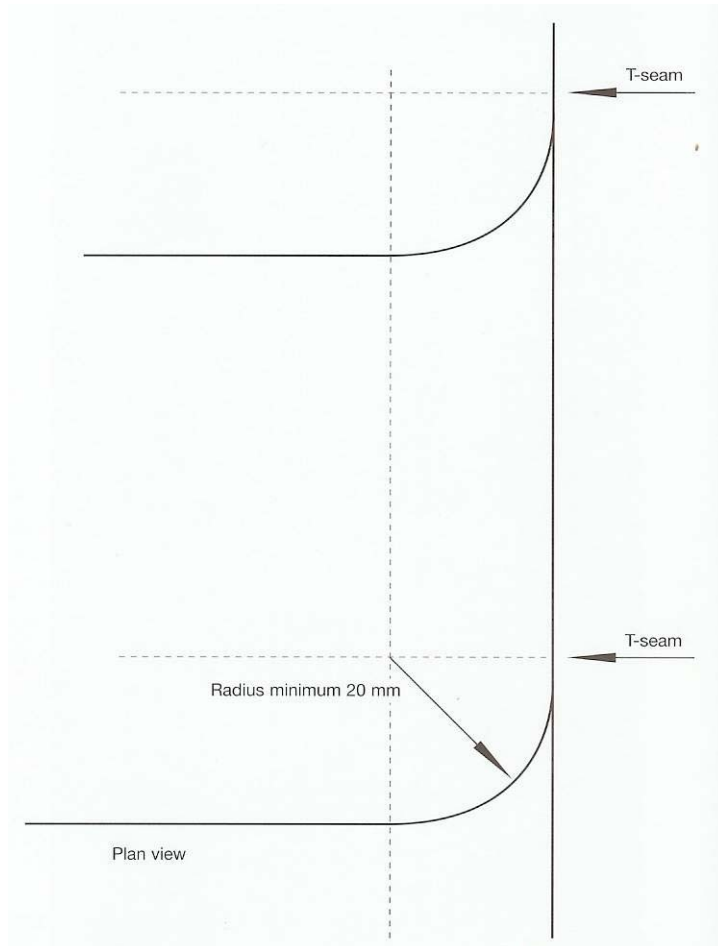
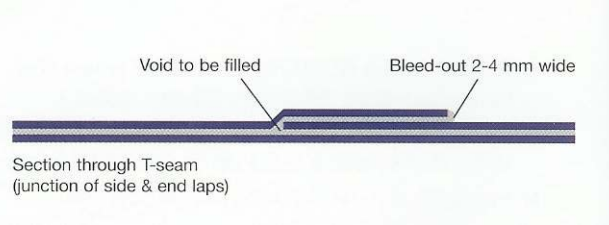


External corner with triangular fillet

General Details

- Round off the sheet only where the corner is visible (Minimum 20 mm radius.)
- End laps should be staggered by at least 200 mm to avoid excessive build-up of material thickness.
- Finish similar details uniformly throughout.





Horizontal & Joint Application

