METHOD STATEMENT
FOR IN-SITU ADHERED MEMBRANES
SikaProof® P-1201 System

03.07.2019 / V01 / SIKA CORPORATION

BUILDING TRUST

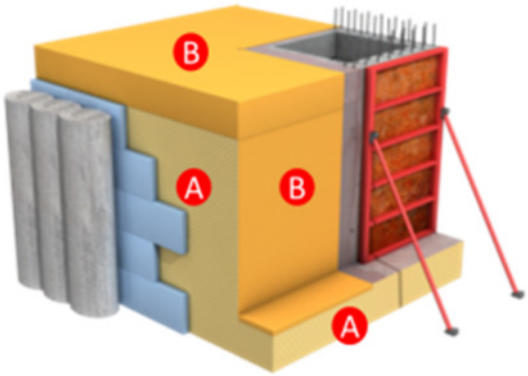
TABLE OF CONTENTS

1 SCOPE

This Method Statement describes the in-situ adhered, cold-/post-applied, fully bonded SikaProof® P-1201 sheet membrane waterproofing system.

2 SYSTEM DESCRIPTION

SikaProof® A & P are fully and permanently bonded, flexible sheet membrane waterproofing systems designed to waterproof basements and other below ground structure.



A) **The pre-applied SikaProof® A** system is installed on the concrete blinding below base slabs and on single-faced formwork for walls, before the reinforcement is fixed and the concrete is poured directly onto the membrane, creating a full mechanical bond with the hardened concrete structure.

B) **The post-applied SikaProof® P** system is installed onto existing hardened concrete structures, such as horizontal edges, decks and on walls with double-faced formwork.

The fully bonded SikaProof® P-1201 membrane system consists of two main components: The two component polyurethane (PU) based **SikaProof® Adhesive-11H** (horizontal) or **SikaProof® Adhesive-11V** (vertical) and the highly flexible polyolefin (FPO) based **SikaProof® P-1200 sheet membrane**.

The SikaProof® P-1201 system is a cold- / post-applied, in-situ adhered waterproofing system that is designed for installation onto **existing hardened concrete structures,** where it is fully bonded to the prepared surfaces.

USES

Waterproofing, damp-proofing and concrete protection for basements and other below ground concrete structures against ground water ingress. SikaProof®P-1201 membrane system is suitable for installation on:

- vertical reinforced concrete walls
- horizontal reinforced concrete slabs, protrusions, decks and podiums
- extensions and reconstruction works
- prefabricated structures

CHARACTERISTICS/ ADVANTAGES

- Fully bonded onto the harden concrete structure
- No lateral water underflow between the reinforced concrete structure and the membrane system
- Highly flexible with crack-bridging abilities
- High watertightness tested according various standards
- Easy to install with fully adhered joints (no welding required)
- Cold- applied (no heat or open flames required)
- Temporary resistant to weathering and UV-light during construction
- Resistant to aging
- Resistant to aggressive mediums and gases in natural ground water and soil
- Can be combine with other approved Sika Waterproofing systems

2.1 REFERENCES

Europe

- Product Declaration EN 13967:2012 – Flexible sheets for waterproofing (type A&T), CE Certificate No. 1349-CPD-065
- German function tests for the system – Test lab Wissbau Beratende Ing.-GmbH, Essen Germany, Report No. 2016-397

North America

- Function testing according to ASTM D 5385 modified (Resistance to lateral water underflow), internal MPL

2.2 LIMITATIONS

Limitations on applications and use of the system are contained in the **Product Data Sheet (PDS) for the SikaProof® P-1201 System**. Please ensure that you have the current local PDS and refer regarding these limitations in relation to:

- Recommended applications
- Maximum head of water
- Substrate nature and quality
- Substrate preparation, surface temperature and moisture
- Maximum exposure time before protection (only temporary UV and weather exposure)
- Exposures during service life (max. head pressure, temperature, chemical resistance etc.)

The **SikaProof® P-1201** membrane system has to be protected as quickly as possible after installation, especially before any backfilling, in order to protect the system from any mechanical damage. At the maximum in less severe conditions and exposure, within 90 days, due to possible adverse environmental influences (UV light) and heat in particular).

3 PRODUCTS & SYSTEM

3.1 SYSTEM COMPONENTS

The **SikaProof® P-1201** system consists of the following components required to create the watertight system:

SikaProof® Adhesive

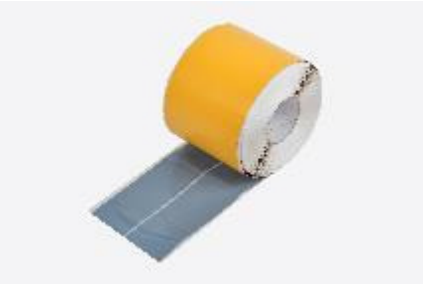
- **SikaProof® Adhesive-11V, Component A** (589701)
- **SikaProof® Adhesive-11H, Component A** (589702)
- **SikaProof® Adhesive-01, Component B** (589703)

SikaProof® P-1200

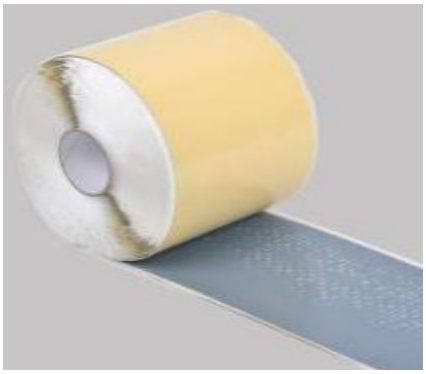
- Available in rolls of 1m wide sheets (531967)

SikaProof® Accessories

- **SikaProof® ExTape-150** (424705)
  External detailing tape to seal connections, overlaps and details (e.g. around pipe penetrations)



- **SikaProof® Patch-200 B** (457589)
  External membrane tape to repair and seal damaged membrane locally, applied externally onto the membrane side.



3.2 STORAGE CONDITIONS / SHELF LIFE

All SikaProof® P-1201 system components have a defined maximum shelf life (see chart below) from their date of production, provided they are stored properly in unopened, undamaged original packaging, in a horizontal position, in dry conditions and at temperatures between +40°F and +85°F. They must also be protected from direct sunlight, rain, snow and ice etc. Do not stack pallets of the membrane rolls on top of each other, or under pallets of any other materials during transport or storage.

SikaProof® Adhesive-11(H or V) Comp A	SikaProof® Adhesive-11 Comp B	SikaProof® P-1200 membrane
12 months	6 months	18 months

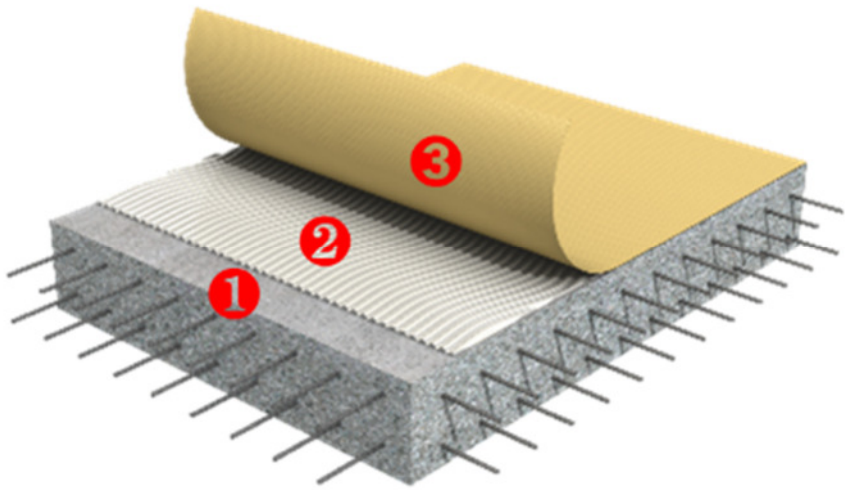
3.3 SYSTEM BUILD-UP

The **SikaProof® P-1201** system is a cold- / post-applied and in-situ adhered waterproofing system that is designed to be fully bonded to existing hardened reinforced concrete structures. Therefore correct substrate preparation of the concrete surface is essential in order to ensure a complete and durable bond of the system, which then also prevents any lateral water underflow between the concrete structure and the waterproofing membrane system, even in the event of a membrane damage.

The SikaProof® P-1201 system is a cold- / post-applied, in-situ adhered waterproofing system that is designed for installation onto **existing hardened concrete structures (1),** where it is fully bonded to the prepared surfaces.

The bond is created and enhanced by the two component **SikaProof® Adhesive-11 (2)** that is applied onto the prepared concrete surfaces to seal ready for the **SikaProof® P-1200 (3)** sheet membrane, which is rolled out and pressed firmly into the adhesive over the entire surface.

Overlap joints, connections and details are all directly sealed and bonded with the same **SikaProof® Adhesive-11** including bonding the **SikaProof® P-1200** membrane to itself where necessary and in conjunction with additional **SikaProof® Accessories** where required.



3.4 CONCRETE QUALITY

Concrete quality is also key factor for successful waterproofing and in order to install a fully bonded and permanently sealed solution, without any lateral water underflow or migration between the **SikaProof® P-1200** membrane and the concrete structure.

The concrete quality and especially that of the surface layer, is primarily determined by the binder matrix, which is therefore also the key factor in obtaining a full and permanent bond. Consequently, the following concrete substrate / surface requirements must be fulfilled:

- Hardened and of sufficient compressive strength, minimum: 3,600 psi
- Minimum pull-off strength: 210 psi
- Dry, sound, clean, free of any contaminants that could prevent or reduce adhesion (such as formwork release agents, oils or grease etc.) and any loose or friable particles
- Free from any larger surface defects (e.g. voids, honeycombing, cracks, protrusions, etc.)

These requirements that must be achieved are predominantly influenced during the design and construction by:

- The **concrete structure** has to be sufficiently reinforced to be stable (recommended minimum wall thickness for new watertight structures is 8 inches)
- **Concrete mix designs** vary from region to region, according to the available raw materials, the environment and anticipated exposure in particular. Therefore Sika recommend defining the standard concrete mix design locally, according to the relevant local regulations and the available material resources. This must obviously be assessed and/or tested to confirm that this will produce a suitable quality concrete to create a fully bonded waterproofing system with the SikaProof® P-1201 system selected.
- The **concrete workmanship** is also key and the concrete must be well placed, compacted/vibrated and cured correctly to produce a watertight concrete structure.
  On horizontal areas the surface finishing is also very important, therefore it is recommended to ensure these concrete surfaces are produced with appropriate trowelling and finishing techniques.

For more information regarding the concrete substrate requirements please refer to Section 6.2 Substrate Preparation, in this Method Statement.

4 PROJECT DESIGN

The successful waterproofing of basement structures requires detailed design and this should be considered as an important aspect of the project, with expert involvement in the early stages of the process.

Firstly, the project's location, function, exposure and any other specific requirements must be fully defined in order to select the most appropriate waterproofing approach and then the right system solution, such as one of the family of SikaProof® membrane systems.

This should always include consideration and assessment of all of the following:

- Type of excavation and substrates
- Construction method
- Maximum water pressures
- Type and degree of any chemical exposure / attack
- Climate and environment during construction and in service
- Minimum thickness of the structural components (floors, walls etc.)
- Degree of any anticipated settlement
- Concrete type and consistency required / available
- Construction program and scheduling (to ensure suitability & installation possibility and practicality of the proposed waterproofing system(s)
- Any other construction related aspects or details that could influence the functionality of the waterproofing and specifically the SikaProof® systems, such as excavation dewatering systems and any other possibilities for potential loading / damage on / to the membrane etc.

4.1 SELECTION OF THE CORRECT SIKAPROOF® MEMBRANE SYSTEM

It is not only water pressure that is the most relevant criterion for selection of the most appropriate SikaProof® membrane system: Other factors arising from different levels of exposure and the requirements of the construction process are also important to help define the right waterproofing solution for each specific project and its secure completion. These include:

- The levels of the water table and nature of the groundwater: Damp soil, percolating water, or water under hydrostatic pressure
- Ground and groundwater conditions: Aggressive mediums (such as sea / salt water, radon / methane gas, acidic soils, pollutants etc.), types of soil, groundwater temperature, seismic exposure to earthquakes etc.
- Static and/or dynamic structural loading: Static load – structural components and equipment etc., dynamic load - vehicles and processes etc., plus uplifting forces, settlement etc.
- Degree of watertightness required, whether minimal seepage can be tolerated, or if absolutely no water penetration, or even no water vapor penetration is permissible.
- Level of durability and the service life required.

The table below can be used as a general selection guide for some typical applications. There are many different and very specific criteria and project requirements that can influence the selection of the appropriate post-applied waterproofing solution such as SikaProof® P-1201 membrane system. This list is therefore not exhaustive but intended as a useful guide.

General selection guide:

Selection criteria	**SikaBit® S-60**	**SikaProof® P-1201**
Technology	Bituminous HDPE thin film	FPO membranes with PO based sealant adhesives
Typical uses	Damp proofing / limited waterproofing / concrete protection of below ground structures	Waterproofing for civil engineering structures, concrete protection for below ground structures
Typical applications	▪ Single structures, individual and strip foundations ▪ Walls in open-cut excavations	▪ Heels/toes of base slabs ▪ Walls in open-cut excavations ▪ Decks, podiums
System limitation (water pressure)	≤ 20 ft (≤ 0.5 bar)	≤ 50 ft (≤ 1.5 bar)
Crack-bridging	Not tested	≤ 1.0 mm

4.2 REQUIREMENTS FOR POST-APPLIED SYSTEMS

The following details have to be considered in the early stages of any project. Especially any requirements for detailing solutions that may have to be installed before the concrete is placed. The correct design and installation of these detailing solutions is critical for the successful completion and watertightness of below ground structures.

Additional joint sealing systems (pre-installed)

Any designed joints or connections in and/or to the structure must be sealed using appropriate Sika® Engineered Joint Waterproofing Solutions, dependent on the project and its structural requirements.

Water can easily enter a structure through all types of joints, connections, voids, cracks or honeycombing etc., plus wherever the waterproofing membrane is not fully bonded to the surface of the reinforced concrete. Therefore all of the joints, connections and voids must be sealed with one or more of the following solutions:

- **Sika Hydrotite Profiles** / **Hydrotite O-Rings** and / or **Leakmaster** Adhesive Sealant (see picture)
- **Sika® Greenstreak Waterstops**
- **SikaFuko® VT** injection hoses

Connections to the SikaProof® A, pre-applied system

For optimal connections between the post-applied SikaProof® P-1201 system and (pre-applied) SikaProof® A systems, the following detailing solutions are recommended.

Connections at base slab heels / toes

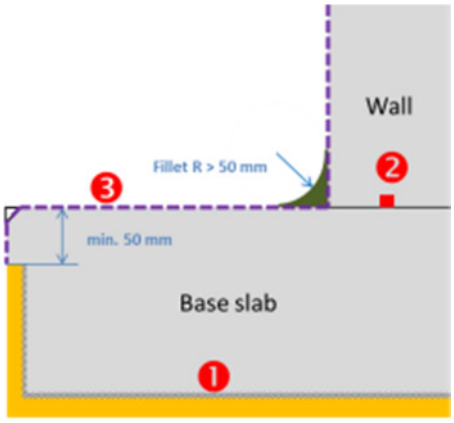
Check and confirm the following:

- The SikaProof A membrane should be terminated vertically minimum 2 inches below the edge
- The concrete edge should be chamfered
- The fillet is created by prior applied **SikaProof® Adhesive-11** forming a curved shape of minimum 2 inches radius
- If SikaProof A is also used for the walls, then it should be set-off from the bottom, to a minimum of 2 inches from the fillet.
- **Additional joint sealing is mandatory,** minimum with Sika Hydrotite.
- The horizontal surface has to be correctly prepaed to achieve the minimum substrate quality.
- T-joints between the SikaProof A and / or SikaProof P-1200 have to be sealed with a patch of SikaProof ExTape-150.

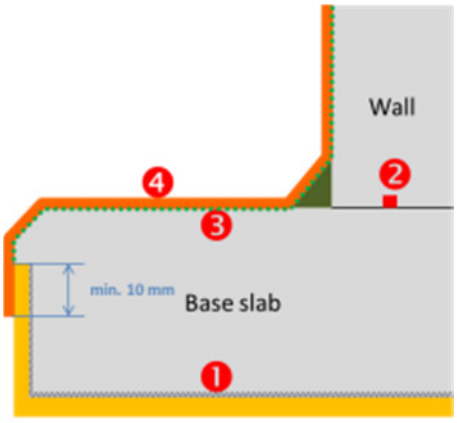
Legend for graphs below:

1) SikaProof® A membrane
2) Sika Hydrotite with Leakmaster
3) Surface preparation & SikaProof® Adhesive-11
4) SikaProof® P-1200

Installation of SikaProof A:



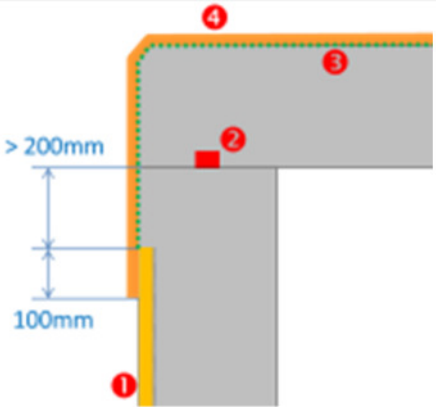
Installation of SikaProof P:



Connections to decks, podiums and walls

Check and confirm the following:

- The edge of the deck should be chamfered.
- If SikaProof A is used for the walls make sure that is terminated at least 8 inches bleow the top of the wall.
- The membrane sheet overlaps and the construction joint from the wall to deck slab should be staggered, by minimum 8 inches.
- Additional joint sealing is mandatory, minimum with Sika Hydrotite.



5 ENVIRONMENT, HEALTH & SAFETY

5.1 PERSONAL PROTECTION EQUIPMENT (PPE)

For the installation of **SikaProof® P-1201** membrane system there is specific personal protection and safety equipment required, especially for the use of the **SikaProof® Adhesive-11 (H or V)**. Please refer to the current Safety Data Sheet (SDS) for **SikaProof® Adhesive-11H and SikaProof® Adhesive-11V.** Any specific local regulations and/or requirements must be fully complied with.

5.2 WASTE DISPOSAL

The generation of waste should be avoided or minimized wherever possible. For further information about specific products, please refer to the respective current Safety Data Sheet.
Any waste from **SikaProof® A&P membrane** sheets and the ancillary tapes that are also produced from synthetic polymers, plus the packaging material (cardboard and liners), can all be recycled and/or disposed of in accordance with local regulations.
Empty containers of **SikaProof® Adhesive-11 (H or V)** may contain some product residues. This material and its container must be disposed of in a safe way. Disposal of this product and any by-products should at all times comply with the requirements of local environmental protection and waste disposal legislation and any relevant local authority requirements. Avoid dispersal of spilled material and run-off, including contact with soil, waterways, drains and sewers.

5.3 CLEANING OF TOOLS

Tools and equipment must be cleaned with suitable cleaner (e.g. xylene) immediately after use.
Hardened material can only be removed mechanically (e.g. grinding / blast cleaning).

6 APPLICATION & INSTALLATION

SikaProof® P-1201 membrane system is a cold- and post-applied in-situ adhered sheet waterproofing membrane system that is installed onto existing / hardened concrete structures.

The membrane overlap joints, connections and all other details are simply bonded and sealed using the membrane and the adhesive, or the additional SikaProof® Accessories and/or ancillary Sika® solutions.

6.0 SUBSTRATE REQUIREMENTS

The substrates must fulfill certain requirements before application of the SikaProof® Adhesive-11 and SikaProof® P-1200 membrane.

If these requirements are not met, than additional and appropriate preparatory measures have to be taken – Please refer to Section 6.1 of this Method Statement 'Substrate Preparation'.

A) Concrete strength

This characteristic will confirm adequate concrete quality and hardness.

- **Compressive strength**, minimum 3,600 psi
- **Pull off strength**, minimum 210 psi

Both should be tested if in any doubt e.g. in a defined test area with suitable equipment such as designed for pull-off testing (see picture) and a rebound test hammer.

B) Surface quality

The surface must be,

- **Free of any larger surface defects** (such as voids, honeycombing, cracks, protrusions, etc.).
- **Clean, free of any contaminants** that could prevent or reduce adhesion (such as release agents, oil, greases, fuel etc.) and free of any loose or friable particles, dust and dirt etc.

6.1 SUBSTRATE PREPARATION

Generally the main substrate for SikaProof® P-1201 membrane system is concrete. When the concrete substrate quality requirements are not met, the following is a description of the necessary preparation and pre-treatment:

Mechanical surface preparation

Remove any weak concrete, high spots/protrusions, cement laitance, existing coatings etc., to achieve a fine-gripping profile that is clean, dry and free from dirt, grease, oil and any other form of surface contamination.

- **Horizontal areas** usually have to be mechanically prepared to some extent, dependent on finishing and curing etc.
- **Vertical areas** also normally require at least some limited mechanical preparation, especially if the formwork was very smooth, there are fins, or grout loss, and/or any other concrete surface defects.
- If **release agents** were used, then any residue and contaminated binder matrix must be removed

Edges and corners

All straight edges and corners must be chamfered to prevent any damage to the membrane and to make installation easier.

Recommendation:

- Smoothen sharp edges slightly, approx. 1 – 2 inches, with a grinder

How to treat the concrete surface mechanically:

For light treatment use a chipping hammer or hand grinder with a diamond disc and a vacuum to remove the dust. Especially for:

- Smaller areas
- Edges and corners
- Base slab toes, high spots/protrusions

For larger areas and areas requiring more extensive surface preparation:

Concrete scabbling

Shot or sand blastcleaning

Grinding

Surface cleaning

Before any repair works or further treatment and installation of the SikaProof® P membrane system, any dirt, dust, loose and friable materials must be completely removed from all surfaces, preferably by vacuum.

Surface repair

Any surface voids, honeycombing, cracks or blowholes must be repaired, filled or levelled using appropriate concrete repair products, such as from the **Sikafloor®, SikaDur®** and **Sika MonoTop®** ranges. The best method of preparation and the repair product will depend on the surface condition, environmental constraints and the specific requirements.

Before any repair works are carried out, any dirt, dust, loose or friable material must be completely removed, preferably by vacuum.

Edges / Fillets

All inside edges and corners have to be chamfered for easier installation. Or take a preformed edge of SikaProof P-1200 membrane sheet.

Alternative Option:

- Create the fillet with SikaProof Adhesive-11V, at least a few hours before installing the membrane
- Do not use any rigid mortar type materials for this fillet, as they will be not tight against lateral water underflow, especially at construction joint slab-wall interface / intersections.

Levelling

Due to the in-situ adhered method, it is also possible use the SikaProof® Adhesive-11 directly as a surface filling and levelling layer. On horizontal areas especially, this will also simplify the operation. If there are larger areas of unevenness or larger / deeper voids etc., then it is recommended to repair these areas in advance with the appropriate Sika solution. Please see and refer to the 'Surface Repair' section above or contact Sika Technical Service for guidance.

6.2 MIXING

The SikaProof Adhesive-11 (H or V) is a two component polyurethane (PU) adhesive which creates the full bond of the system between the membrane and concrete surface. The correct mixing procedure is the key for successful curing and durable bond. Here the working steps:

1) Mix components A+B together with the correct proportion
   - by volume **A:B 100:25**
   - or by weight **A:B 100:19**

   into a suitable mixing pail for **at least 3 minutes** with a low speed mixer until the material becomes smooth in consistency and a uniform beige color.

2) Pour the whole mix into another clean container and mix **again for at least 1 more minute**.

Important Note:
Mixing only that quantity which be used within its pot life.
Use a low speed mixer to avoid aeration while mixing the two components.

6.3 GENERAL INSTALLATION METHOD

The installation method for SikaProof® P-1201 system is the simple and easy bonding of the SikaProof® P-1200 membrane into the SikaProof® Adhesive-11 applied uniformly onto the prepared concrete surfaces, then press it firmly to ensure a secure and durable bond.

1) Substrate preparation (see chapter 6.1)

2) Mixing of SikaProof Adhesive (see chapter 6.2)

3) Apply SikaProof® Adhesive-11V with a notched trowel (minimal 3/16" tooth) onto the entire substrate (no primer required).
4) Apply SikaProof® Adhesive-11H with a notched squeegee (minimal 3/16" tooth) onto the entire substrate (no primer required).

Important Notes:
Respect the given time periods in the PDS:
- **Pot-life:** Within this period the adhesive must be applied.
- **Open / press time:** Within this period the membrane must be applied and adjusted.

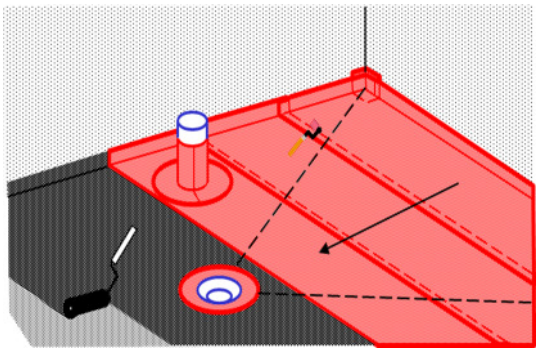
Please take into consideration that this periods depend on the amount of adhesive and the temperature (material and ambient).

5) Prepare and apply the SikaProof®P-1200 membrane directly into the freshly applied SikaProof® Adhesive-11 layer.
And overlap the membrane sheets and adhere with the adhesive by minimum 3.5 inches.

6) Roll in and press the membrane properly into the adhesive. Make sure that there is no bubbles or any air pockets between membrane and adhesive, otherwise remove it carefully. Note that the minimum layer thickness of the adhesive is 1/32" after installation.

The following principles and general installation procedures are recommendations to help achieve a technically correct and fully functional waterproofing system. Contact Sika Technical Service for additional information and assistance.

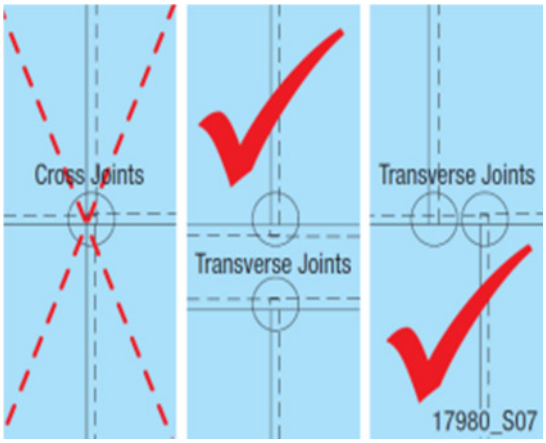
A) **Start to apply the corners, edges and details** using the full 1m wide sheets, or cut strips of the SikaProof® P-1200 membrane as appropriate for the project.



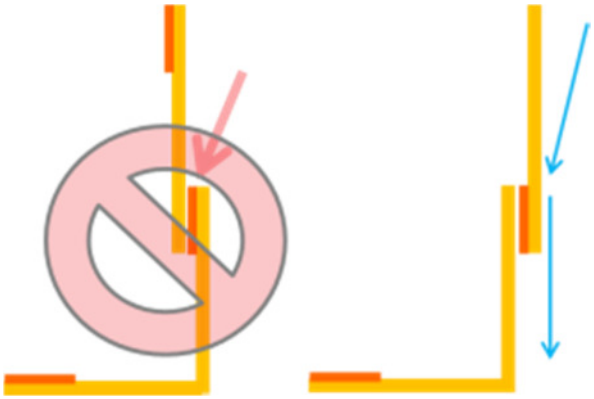
B) **Install the horizontal or/and vertical areas** (see below pictures) with the 1.0m wide SikaProof® P membrane sheets, following these principles:

- Use the **"Umbrella principle"** always overlapping the upper/top sheet on/over the lower/bottom one and ensure the overlaps are all facing down.
- Prevent any X-joints, **joints must be staggered**. (see graphic)
- Always install sheets **from the lowest to the highest points**.
- Do not bend/apply the membrane over two successive edges.
- Firstly bond the larger parts of the membrane sheet.

No X-joints, always use staggered joints



"Umbrella principle", overlap joints must face down



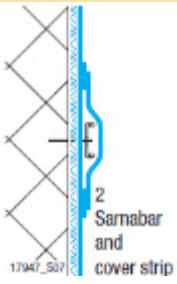
C) After the work is completed, carefully **inspect the installed the membrane system** to check all the overlap joints, connections and details, to ensure they are correctly installed and sealed. Check the chapter 7 Inspection and Quality Controll.

D) **Protect the SikaProof® P-1201 membrane system**, especially on horizontal areas, immediately after installation to prevent any mechanical damage. Also protect the membrane against UV and weathering exposure within 3 month at the latest (see chapter 2.2 Limitations) . See chapter 6.7 Protection & Repair.

Fixing on vertical areas

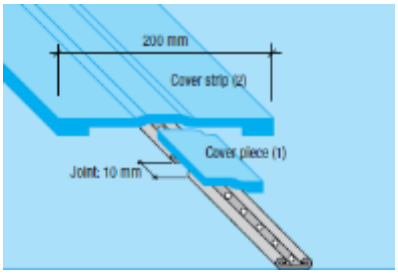
If it is also required to additional mechanically fix the SikaProof® P-1201 system in vertical areas, for example to:

- prevent detachment – particularly in summer or hot climates
- prevent subsequent creep



Then we recommend fixing the sheets:

- regularly with linear horizontal Sarnabars
- Within the overlap of the next sheet, or
- With a cut strip of min. 14 inches wide, centered and bonded on each side of the bars for a min. 7 inches.
- Cover, smoothen and protect the ends of the bars with a piece of SikaProof FixTape-50

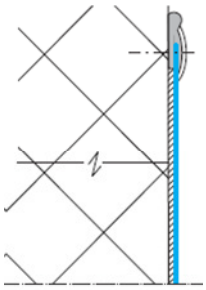


Termination of sheets

Secure terminations of the SikaProof P-1201 system are essential for a secure and durable waterproofing system. The two recommended options are:

1) Sealing with counter flashings:

- Flashings (metal sheet) cut to size
- Mechanically fixed regularly
- Top-sealed with a sealant joint such as Sika Hyflex®-150 LM (including backing strip, primer etc., as required)



2) Sealant packing with fastening bars:

- Apply a bead of sealant (including the appropriate backing strip and primer as required) along the top edge of the sheet
- Install the bar such as Sarnabar over the sealant bead (if a perforated bar is used, also pack / seal under the entire bar with the sealant)

3) Sealing with SikaProof®Adhesive-11 (H or V)

- Apply a strip of adhesive centered over the edge of the applied SikaProof P-1201, minimum width 4 inches.

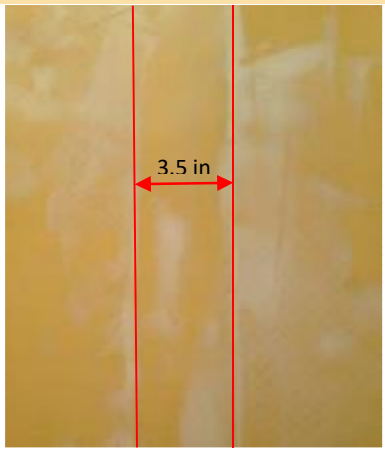
6.4 SEALING AND BONDING OF MEMBRANE JOINTS

All membrane overlap joints, connections and details are bonded and sealed easily, quickly and securely using the SikaProof Adhesive-11.

Additionally using SikaProof Ex-Tape-150 to seal connections and / or any other details. Complex and time consuming membrane welding is not required.

Overlaps of the membrane sheets

Make a simple overlap joint in both the longitudinal and transverse directions to adhere and seal the membrane sheet using the SikaProof Adhesive-11.



- To make it easier and even more secure the membrane has a marked overlap line on one edge in the longitudinal direction. Ensure the overlap is between the two black marked lines for a **minimum overlap of 3.5 inches**.

- In transverse/crossing and other detailing joints ensure a **minimum overlap of 3.5 inches** by careful measurement.

6.5 STANDARD DETAILS

Attention to detail is always one of the keys to successful waterproofing and therefore the design and execution of each individual detail is very important. This section shows how to create and install the recommended standard details for the SikaProof® P-1201 system.

If there are further details to design you can also contact your local Sika Technical Services Department for advice.

Edges

How to treat edges and corners are essential details because all structures will necessarily include these requirements.

Follow fillet recommendations outlined on page 14 (Edges and Fillets).

There are two main different types of external and internal corner details to understand as outlined below:

Recommendation:

Always keep the installation procedure as simple as possible:

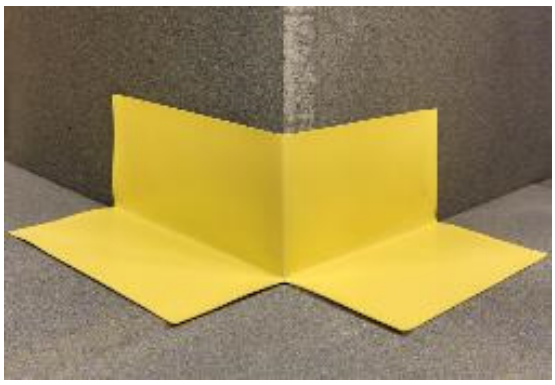
- Creat single corners pieces
- Do not try to fold the membrane over two successive corners or edges, especially at base slab edges.
- Bond and secure the larger area part of the prepared membrane corner pieces first.
- Finally connect single corner pieces with a single membrane sheet.

External Corners

1) Cut **two equal** small singles pieces of the membrane as shown on picture.

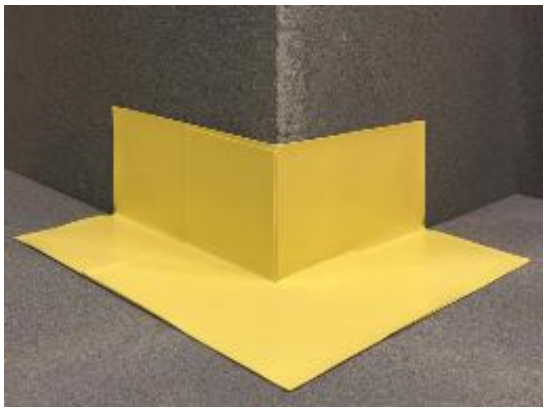
2) Fit the the first single piece of the membrane into the corner, as shown on the picture. Use a hot-air gun to shape the membrane properly.

   Finally adhere the first membrane piece onto the concrete surface with SikaProof Adhesive.



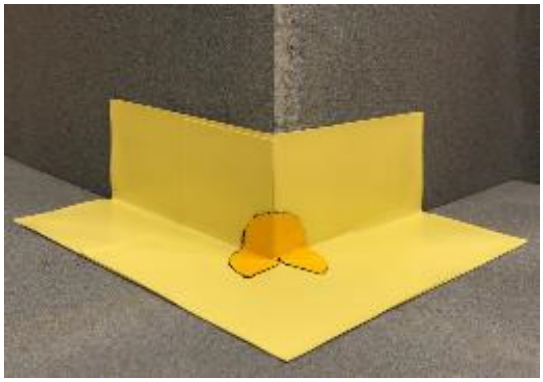
3) Fit the the second single piece onto the first adhered membrane piece into the corner, as shown on the picture. Use a hot-air gun to shape the membrane properly.

   Finally adhere the second membrane piece onto the first piece and concrete surface.

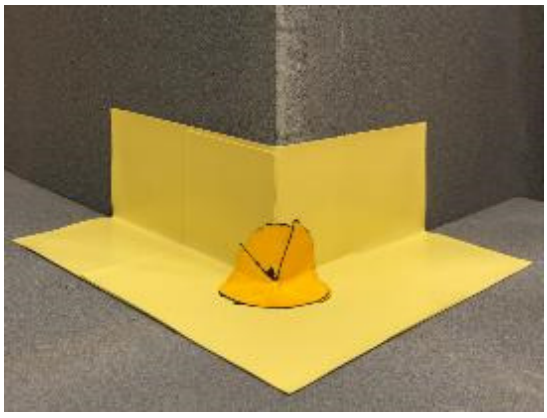


4) Cut **two equal small pieces** of Sika Proof®ExTape-150 as shown on the picture.

5) Use the first piece to seal the corner as shown on the picture.



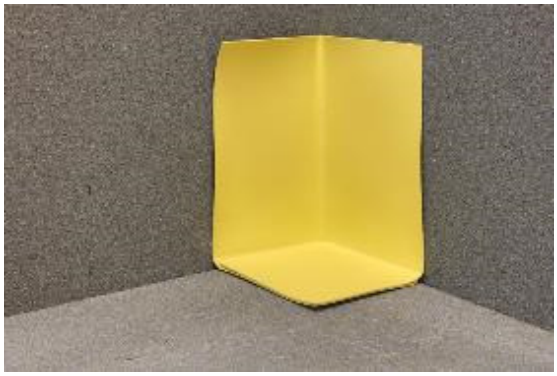
6) Use the second piece to seal the corner as shown on the picture.



Internal Corners

1) Cut **one small single piece** of the membrane as shown on the picture.

2) Use a hot air gun to shape the membrane properly and adhere the piece onto the concrete using SikaProof® Adhesive-11. Fit the membrane into the edge.



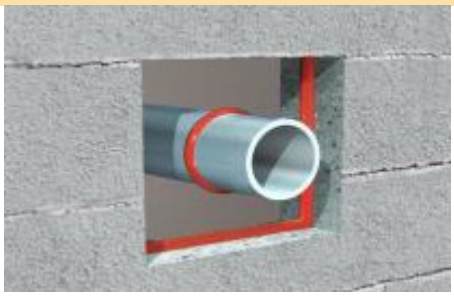
3) Cut **one small pieces** of SikaProof®ExTape-150 as shown on the figure.

4) Use the piece of SikaProof®Ex Tape-150 to seal the corner as shown on the figure.

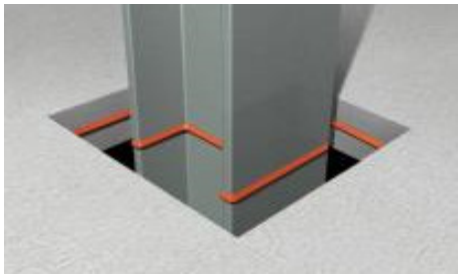
Penetrations

In general any penetration has to be sealed. The best detailing solution depends on the:

- Grade of exposure and project requirments
- Types of pipes, cables, wires or beams e.g. flexible or rigid material and sizes etc.
- Design of the penetration area / entry, e.g. is there a sleeve.



Generally all penetrations **require additional sealing with a joint sealing solution**, at the minimum this means a Sika Hydrotite, -Ring, -Sealant.



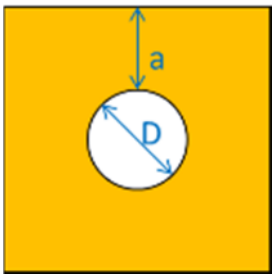
Important note:

For any specific and complex penetration details, e.g. steel beams with H profiles, flexible ducts, multiple wires and cables etc., these will have to be detailed and sealed individually as appropriate – Therefore, for any such details please contact your local Sika Technical Services Department.

Penetrations Option 1

The recommended procedure and how to create the detail:

1) Cut a single piece of membrane. The diameter (D) of the hole should be minimum ¾" smaller than the diameter of the pipe. Distance (a) should be more than 6 inches.



2) First apply the adhesive onto the concrete surface around the pipe detail. Create a little fillet around the pipe with adhesive. Pull over the prepared mebrane piece over the pipe.

3) Fit and adhere the membrane piece properly around the pipe into the fresh applied adhesive. Make sure that the membrane upstand (3/8") fit and is adhered and pressed properly with sufficient adhesive below.

4) Adhere a strip of SikaProof® FixTape-50 around the pipe, as additional sealing.

5) Finally adhere a piece of SikaProof® ExTape-150 around the pipe.

Penetrations Option 2

For high demand and exposed projects we recommend to use Sikadur Combiflex SG system to seal any penetration.

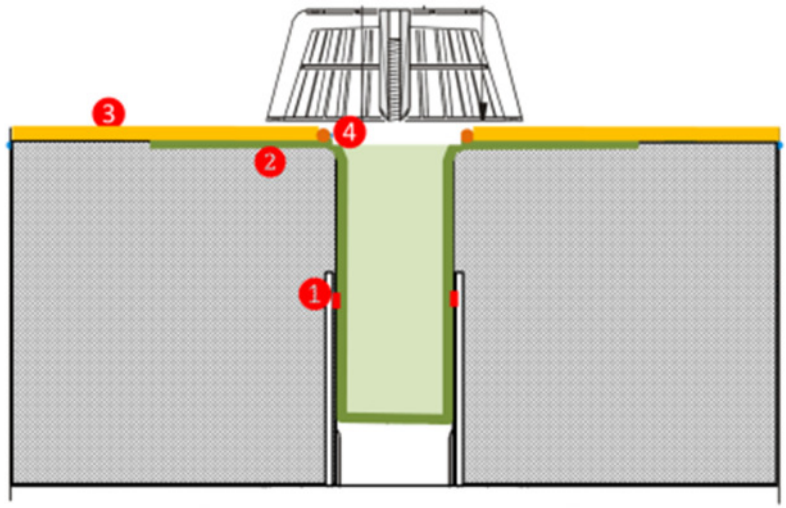
For more detailed information and guidance please refer to the current System Data Sheet and Method Statement for the Sikadur Combiflex SG system.

Drains & Overflows

Drains are obviously only provided in ground, without a high water table and permanent head. Here we adapt the Sarnafil drain solution used successfully for many years by our coleagues for roof waterproofing. It is recommended to use the preformed Sarnafil T Drain pieces.

How to install this system: Please refer to the current Method Statement.

Generally the recommended procedure for installation is:



1) Using the existing drain/pipe connection with its sealing gasket (provided by the Main Contractor)
2) Fix the Sarnafil T Drain piece by fully adhering its base to the concrete. (prevents any water underflow)

Recommendation: Make sure the base is not raised to prevent any standing water.

3) Cut and bond an extra membrane piece on the T drain and the prepared concrete surface, size approx. 8 inches wider than the T drain base plate. The cut hole in the membrane sheet should be minimum ¾" smaller than the pipe drain diameter.
4) Finaly seal the gap around with adhesive or with Sikaflex sealant.

Construction joints

As already mention in Section "4.2 Requirements for post-applied systems" it is strongly recommended to use an additional engineered joint sealing solution for all construction joints, as a minimum this should be by using a hydrophilic Sika Hydrotite profile or Leakmaster sealant.

This aspect of waterproofing also has to be considered in the early design stages of the project, especially when the joint sealing system has to be pre-installed before the concrete is cast, as with waterbars and injection hoses etc., plus the location of these necessary construction, connection and isolation joints is very important to ensure that they can be securely and durably sealed by practical means.

For special detailing solutions for construction joints and junctions, please contact your local Sika Technical Services Department for advice.

Expansion joints

For the secure sealing of expansion joints in most watertight structures it essential to use Sika Greenstreak Waterstops for additional pre-sealing and optimum structural movement accommodation. The Sikadur SG **Combiflex** system can also be used in projects with slightly lower water pressure demands.

Therefore all normal watertight construction standards and engineered joint waterproofing details and dimensions are required in accordance with national and international standards. For further information regarding the design of expansion joints please refer to the Method Statements for Sika's engineered joint waterproofing and sealing solutions.

Note: If high movement, elongation and exposure demands are anticipated, firstly install a single SikaProof P-1200 membrane sheet (1m wide) along the expansion joint, directly over the separation liner under the slab

6.6 PROTECTION & REPAIR

Basically it should always be a clear goal to prevent any requirement for further repair works to be necessary on the installed **SikaProof® P-1201** membrane system.

A) Protection

Apart from the defined limitations of weather exposure, it has to be a priority to protect the SikaProof® P membrane as soon as possible after the installation.

As with all other membrane waterproofing systems, the **SikaProof® P-1201** membrane system must be protected against any damage including:

- mechanical or other damage during construction
- damage from the backfill material / process
- settlement/friction damage from the ground (incl. any separation layer)

The protection layer over the installed membrane therefore has to be resistant to and withstand all of the following:

- The backfilling aggregate diameter/shape
- The nature of the fill/soil
- The method of compaction
- The anticipated level of settelment/friction

The following ancillary products are available to protect the **SikaProof® P-1201** membrane system:

- **Sika Drainage Mat 420**
- **Sika Drainage Mat 720**
- **Sarnafelt**
- Other geotextiles > 800 g/m^2
- Other insulation boards > 50 mm

Important note:

During and after the installation of the **SikaProof® P-1201** membrane system there are no other trades or heavy equipment allowed into the installation area at any time.

- If required and accepted by the waterproofing contractor, the following may be permitted:
  - Other trades with lightweight materials and equipment could work on sufficiently protected areas.
  - Welding works with special attention and protection.
- No heavy equipment is allowed on the membrane at all.

For areas which are permanently subject to traffic load, a separate and additional protection screed or slab is recommended.

B) How to repair

Any damage to the SikaProof® P-1201 membrane system must be repaired to achieve and maintain a secure watertight waterproofing system. This is despite the fact that the full bond prevents any lateral water migration, and is in order to ensure that the structure remains durable, watertight and protected in all areas by the SikaProof® P-1201 membrane waterproofing system.

SikaProof P-1201 system can be repaired at any time during or after installation by the following two ways:

1) **By it-self:**
   Remove the damaged area, clean it and adhere a patch of SikaProof® P-1200 membrane with SikaProof Adhesive. Make sure to overlap the patch properly (minimum 4 inches).

2) **With SikaProof Patch-200 B tape**
   For small spots and/or damages the SikaProof®Patch-200 B can be used to seal. First of all remove lose, upstanding membrane pieces and clean the substrate before apply the patch.

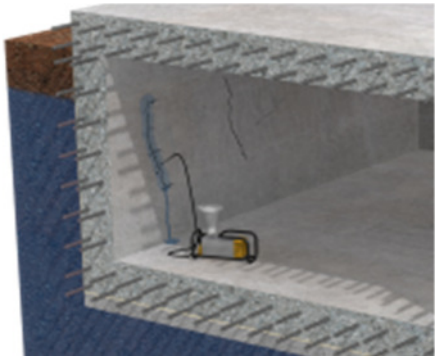
3) **With Sikadur Combiflex System**
   Apply a patch of Sikadur Combilex tape with the Sikadur Combiflex adhersive onto the repairing area. Remove the damaged area, clean it and adhere the patch.

C) Repairs during service life

If any damage occurs throughout the service life, the damage is limited to the area of the damage only, due to the full bond of the **SikaProof® A&P** membrane systems, which prevents any lateral water underflow.

- Additional sealing or resealing of any joints is essential to prevent any leaks (construction, movement and connection joints).
- Any locally damaged areas or cracks can easily be sealed e.g. by localised injection.

For more information on Sika's injection resin solutions please contact your local Sika Technical Services Department.



7 INSPECTION AND QUALITY CONTROL

The SikaProof® P-1201 membrane system must only be installed by Sika trained contractors. As a rule, a continuous workflow during the installation and following a pre-defined working procedure is best to avoid any mistakes. Sika recommends that all contractors should record all relevant installation details and site conditions etc., in a written record with pictures, to help to ensure successful completion and to provide a useful future reference for the owner.

A) Substrate Inspection

Immediately before installation begins the substrate has to be given a final inspection to confirm that it is ready for the installation.

A check list for this is very useful and recommended as follows.

The substrate must meet the following requirements:

- Hardened and of sufficient compressive strength, minimum 3,600 psi
- Minimum pull off strength, 210 psi
- Minimum surface temperature 0 °F
- Sound, even, level and without surface defects (such as blowholes, voids, honeycombing, cracks, protrusions, etc.), surface roughness $S_R \leq 1/16$" (see below)
- Clean, free of any contaminants that could prevent or reduce adhesion (such as release agents, oil, grease, fuel etc.) and free of any loose or friable particles, dust and dirt.

B) Final Inspection

After the membrane installation is completed

When installation is completed, quality control checks on the system can be conducted by means of a visual inspection of the entire surface, paying particular attention to the bonded joints.

Important Note:

This inspection is essential due to the fact, that the contractor has no further opportunity to influence the success of the fully and permanently bonded waterproofing system, as the Main Contractor and all of the following trades that potentially have to work over the installed **SikaProof® P-1201** membrane system, are beyond their control and responsibility.

Checklist for inspection after installation:

- The installation is complete in all areas without any damage
- All self-adhesive strips are fully bonded
- All detailing tapes and connections have been correctly bonded.
- All details are completely and properly done
- All release liners, excess and waste materials, plus any other debris is removed from the **SikaProof® P-1201** system.
- The membrane is protected according and within the defined periode.

Before backfilling

If the protection of the **SikaProof® P-1201** membrane system is not applied as part of the membrane system installation, then it is recommended to inspect the applied system again completely before the protection against backfilling is installed. Any damage can then be identified and repaired.

Finally the membrane system must be protected within the defined exposure limitation, see Section 2.2 Limitations.

8 EQUIPMENT, TOOLS

SikaProof® P-1201 membrane system is not welded, it is an easy, fast and secure system that is simply bonded and sealed. For correct and secure installation the following basic tools are required, no special equipment is used:

- Tape measure
- Marking pen
- Membrane cutter
- Metal straight edge for cutting
- Small pressure roller
- Hot air gun

- Adhesive slow speed mixer
- Extra pails for proper mixing of the adhesive
- Notched trowel minimum 3/16” tooth
- Notched squeegee minimum 3/16” tooth
- Wiper, stiff brush, trowel (no sharp edges) minimal 20 inch width

9 CERTIFICATION & APPROVALS

Fully bonded sheet membrane waterproofing systems for basements, such as SikaProof® P-1201, are not yet subject to any agreed International Standards. Therefore existing tests and standards were adapted to assess and confirm the system's suitability in terms of its watertightness and fully bonded performance. These include:

Europe

- Product Declaration EN 13967:2012 – Flexible sheets for waterproofing
  CE Certificate No. 1349-CPD-065
- German function tests, test institute Wissbau Beratende Ing.-GmbH
  Function test for SikaProof® P-1201, report no. 2016-397

North America

- Function test according ASTM Test D 5385 modified, Sika MPL (internal material test lab) Zürich

10 LEGAL NOTE

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. in practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the products suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. 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.