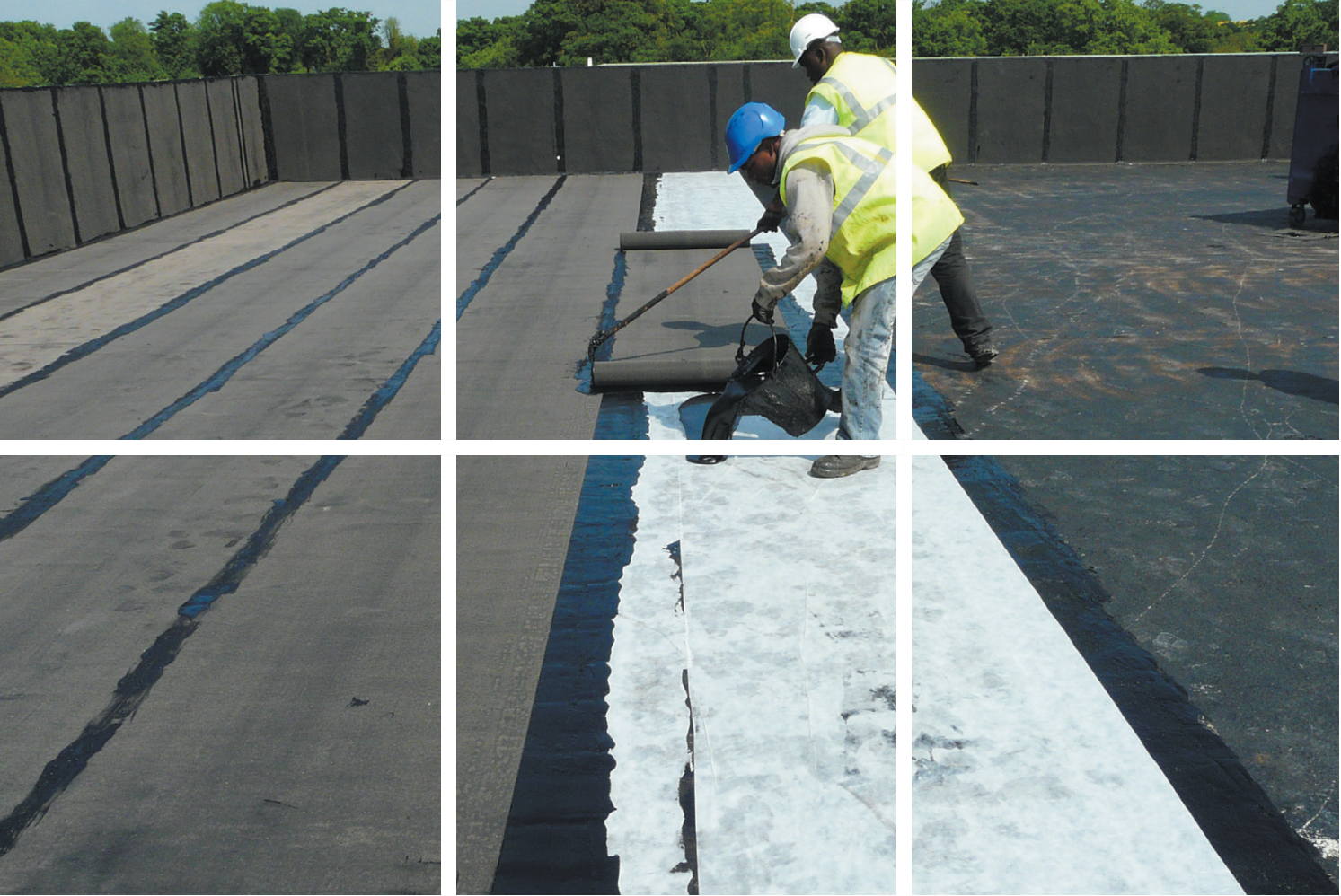

Hot Melt Waterproofing System



System Installation Guidelines



About this Guide

These system Installation Guidelines are intended as a guide for Site Operatives, Supervisors and Managers to ensure the correct storage, handling, installation and protection of Neuchâtel Permateg Hot Melt Monolithic Systems.

130 Years of Knowledge

IKO, our Neuchâtel Permateg supplier, continues to remain committed to its family values of entrepreneurial spirit, craftsmanship and innovation in roofing, waterproofing and insulation that were the foundation of the business in 1951, as envisioned by IKO founder, Israel Koschitzky. IKO is a truly Global enterprise, distributing products to 96 countries around the globe with manufacturing plants in Canada, United States, United Kingdom, Belgium, Holland, France and Slovakia.

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Neuchâtel Permaterc Hot Melt Monolithic Waterproofing Systems

Neuchâtel Permaterc Hot Melt Monolithic Waterproofing Systems comprise of Neuchâtel Permaterc Ecowrap or Neuchâtel Permaterc Anti-Root hot melt waterproofing compounds, specially formulated combinations of refined bitumen, synthetic rubbers, fillers and other additives, which are hot-applied in conjunction with carefully selected reinforcement/ detailing fabrics and protection layers to give the ultimate waterproofing performance.

Installed by a nationwide network of Neuchâtel Registered Permaterc Installers, Neuchâtel Permaterc provides a fully bonded, tough, flexible, waterproof membrane for flat (including zero falls inverted roofs, podiums, green roofs, blue roofs and protected vehicle decks. Neuchâtel Permaterc is also suitable for use as a damp-proof membrane in solid concrete floors or as the waterproofing layer in a typical sandwich membrane used for above or below ground waterproofing in concrete, brick or blockwork structures.

NB: Neuchâtel Permaterc Anti-Root is specifically designed for use in Extensive & Intensive Green Roof and Biodiverse Roof systems.

Features and Benefits

- Hot applied system
- Suitable for completely flat (zero fall) decks
- BBA Certified No. 03/4009
- Outstanding durability - lasts the design life of the building
- Nominal membrane thickness of 6mm
- Tough and resistant to impact damage
- Excellent low temperature flexibility
- High bond strength to substrate - High tensile strength
- Homogeneous and seamless
- Seamless application and rapid setting
- Resistant to rain, snow and frost immediately after application
- Integral root protection. No need for separate anti root barriers (Neuchâtel Permaterc Anti Root)
- Virtually no packaging to be disposed of (zero wrapper waste)

Neuchâtel Permamatec System Compounds

Neuchâtel Permamatec Ecowrap Compound

A specially formulated combination of refined bitumen, synthetic rubbers, fillers and other additives. It is hot applied to the prepared substrate using squeegees to a total nominal thickness of 6mm.

Size: 12 kg of polypropylene wrapper



Neuchâtel Permamatec Anti-root Compound

A special anti-root formulation of the Neuchâtel Permamatec Ecowrap Compound for use in green roof specifications. It is hot applied to the prepared substrate using squeegees to a total nominal thickness of 6mm.

Size	12kg in polypropylene wrapper
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Neuchâtel Permateg System Primers & Reinforcement Sheet

Neuchâtel Permateg Polymer Primer

A synthetic rubber based primer for use on concrete and other substrates prior to the installation of Neuchâtel Permateg.

Product Details

Coverage	4ltr/m ²
Size	25ltr (drum)



Neuchâtel Permateg High Penetration Primer

A specially formulated bitumen primer for use on concrete and other surfaces prior to the installation of the Neuchâtel Permateg system.

Product Details

Coverage	6-8ltr/m ²
Size	25ltr (drum)

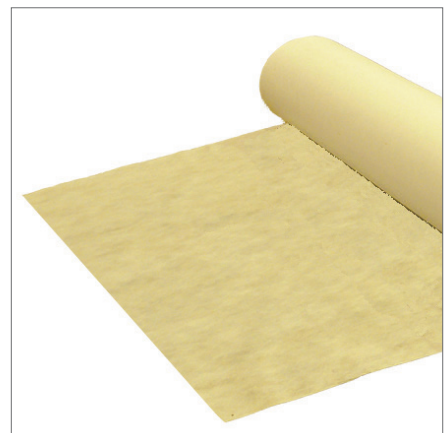


Permaflash-R

A 55g/m² polyester reinforcement sheet, provides high tensile strength. Installed between the two applications of Neuchâtel Permateg compound.

Product Details

Roll Size	200m x 1m
Roll Weight	12kg



Permaflash Detailing

Permaflash-D150

A flexible bitumen polymer detailing strip, installed to reinforce upstands change of angle details and minor movement joints, to accommodate subsequent differential movement. It is bedded into a coat of Neuchâtel Permateg followed by the full Neuchâtel Permateg System.

Product Details

Roll Size	20m x 0.15m
Roll Weight	4.8kg

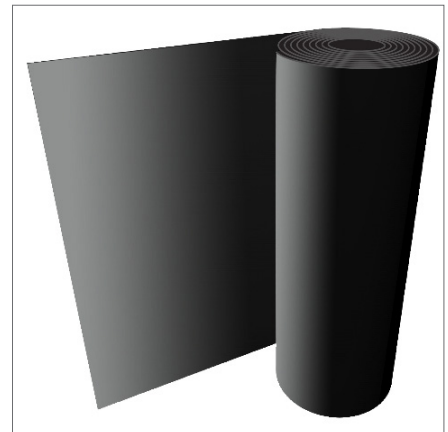


Permaflash-D500

A flexible bitumen polymer detailing sheet, installed to rainwater outlets. It is bedded into a coat of Neuchâtel Permateg followed by the full Neuchâtel Permateg System.

Product Details

Roll Size	20m x 0.5m
Roll Weight	16kg



Permaguard Bitumen Protection Membranes

Permaguard-F

A sand surfaced 180g/m² polyester based bitumen membrane. It is installed as a protection layer into the final coat of the Neuchâtel Permateg whilst it is still hot.

Product Details

Roll Size	20m x 1m
Roll Weight	39kg

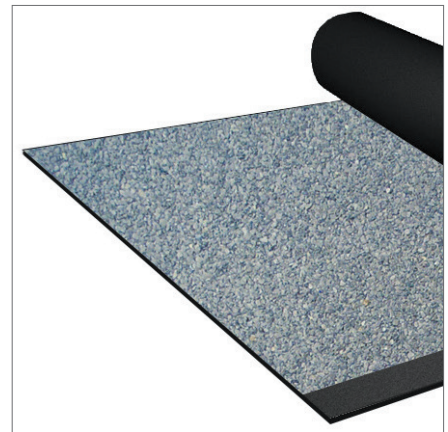


Permaguard-M

A slate surfaced high performance torch-applied 180g/m² polyester based SBS coated bitumen membrane, with a thermofusable film to the underside. It is torch applied as a protection layer to Neuchâtel Permateg on exposed upstand details.

Product Details

Roll Size	8m x 1m
Roll Weight	35kg



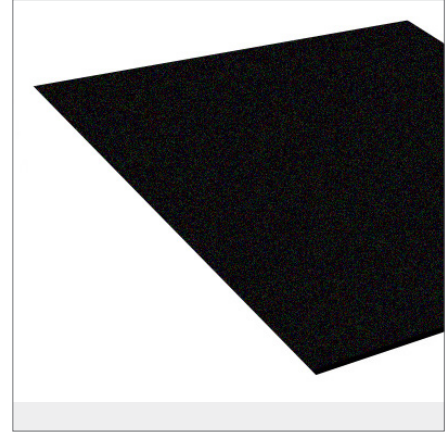
Permaguard System Protection Boards

Permaguard-PB

A 3.2mm thick protection board fabricated with a bituminous core of non woven glass fibre reinforcement. It exhibits high strength, excellent puncture resistance and non-compressible nature. Permaguard PB is installed into the final coat Neuchâtel Permateg Compound whilst it is still hot with all joints taped.

Product Details

Standard Size	1.22m x 1.22m (1.48m ²)
Unit Weight	7.31kg (board)
Nominal Weight	4.94kg/m ²

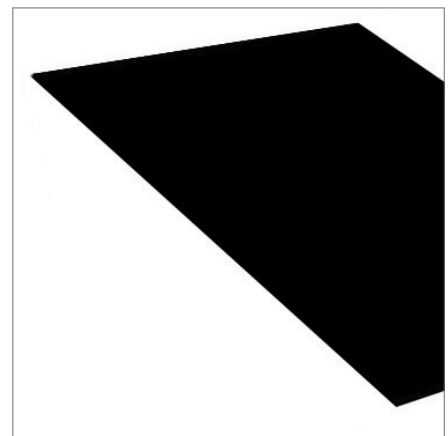


Permaguard-HDPB (Heavy Duty)

A 3mm high density polymeric protection board which is extremely tough with high-impact resistance used in heavy-duty situations. Permaguard HDPB is installed into the final coat of Neuchâtel Permateg Compound whilst it is still hot. All joints are taped.

Product Details

Standard Size	2m x 1m (2m ²)
Unit Weight	10.5kg (board)
Nominal Weight	5.25kg/m ²



Roofgarden AD/F Cap Sheet

Roofgarden AD/F Cap Sheet

A high performance cap sheet consisting of a polyester base, coated with APP polymer modified bitumen. The bitumen coating contains a specially formulated anti-root treatment, which prevents the penetration of roots from a range of plants and shrubs. Flexible down to minus 20°C. Used as the final layer in a roof garden specification if Neuchâtel Permateg Anti-Root Compound is not used.

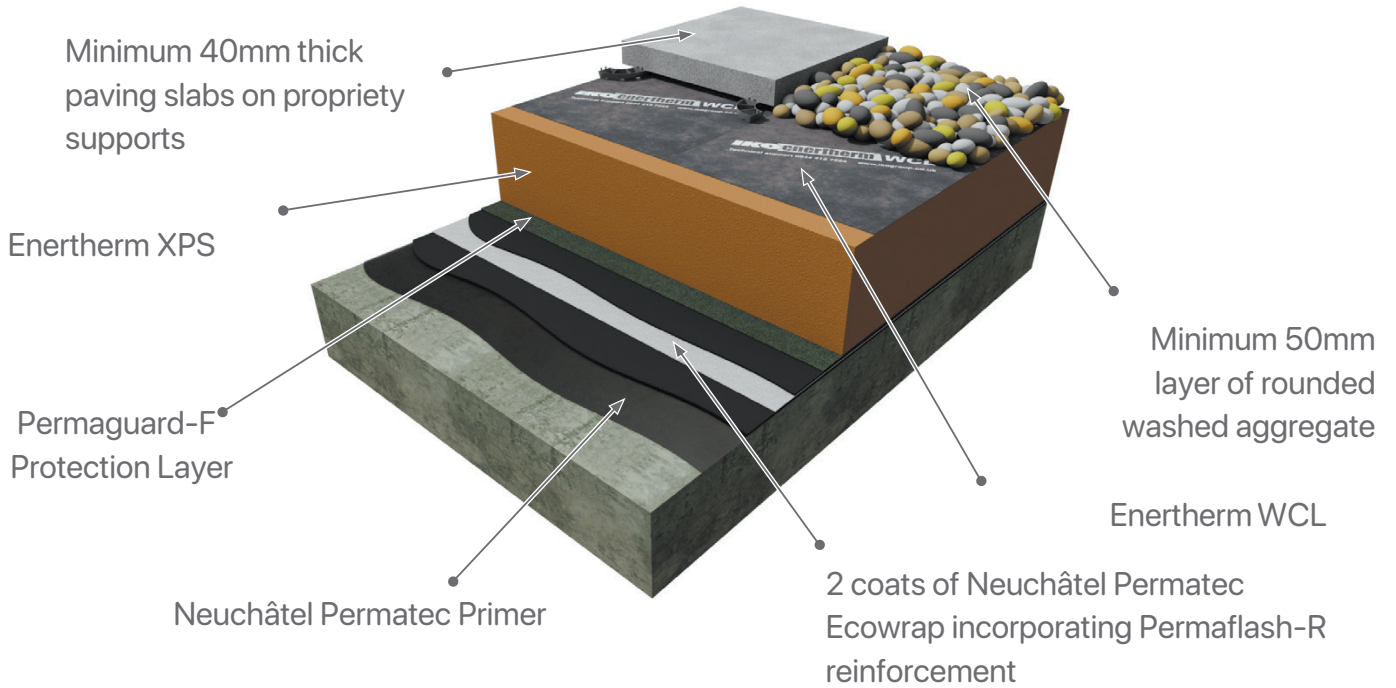
Product Details

Accreditation	FLL 4-Year Root Penetration Test
Roll Size	1m x 7.5m
Weight	46kg

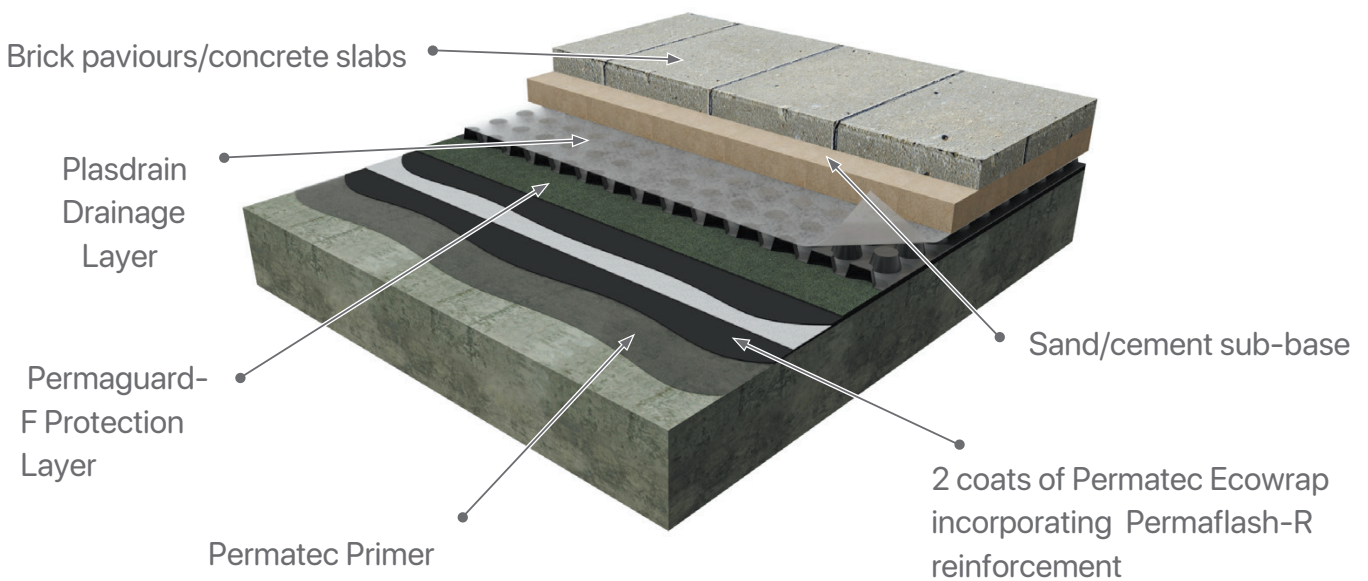


Typical Neuchâtel Permateg System Build Ups

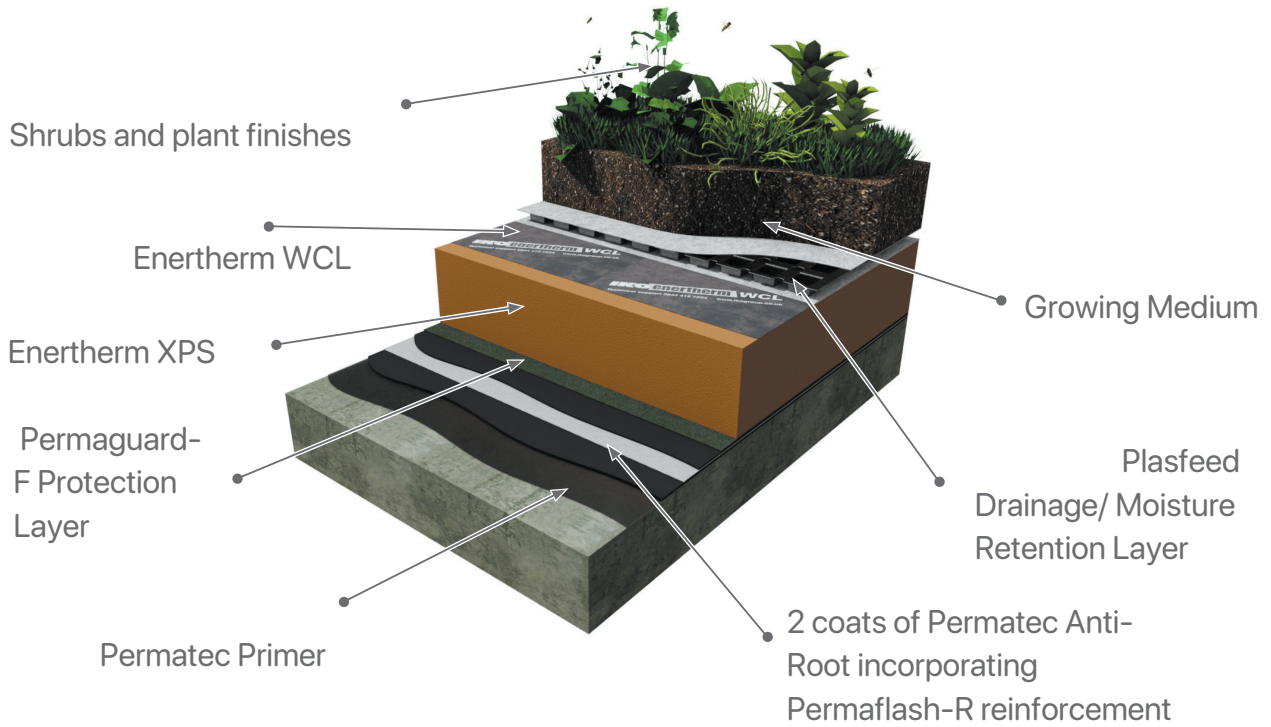
Inverted Roof



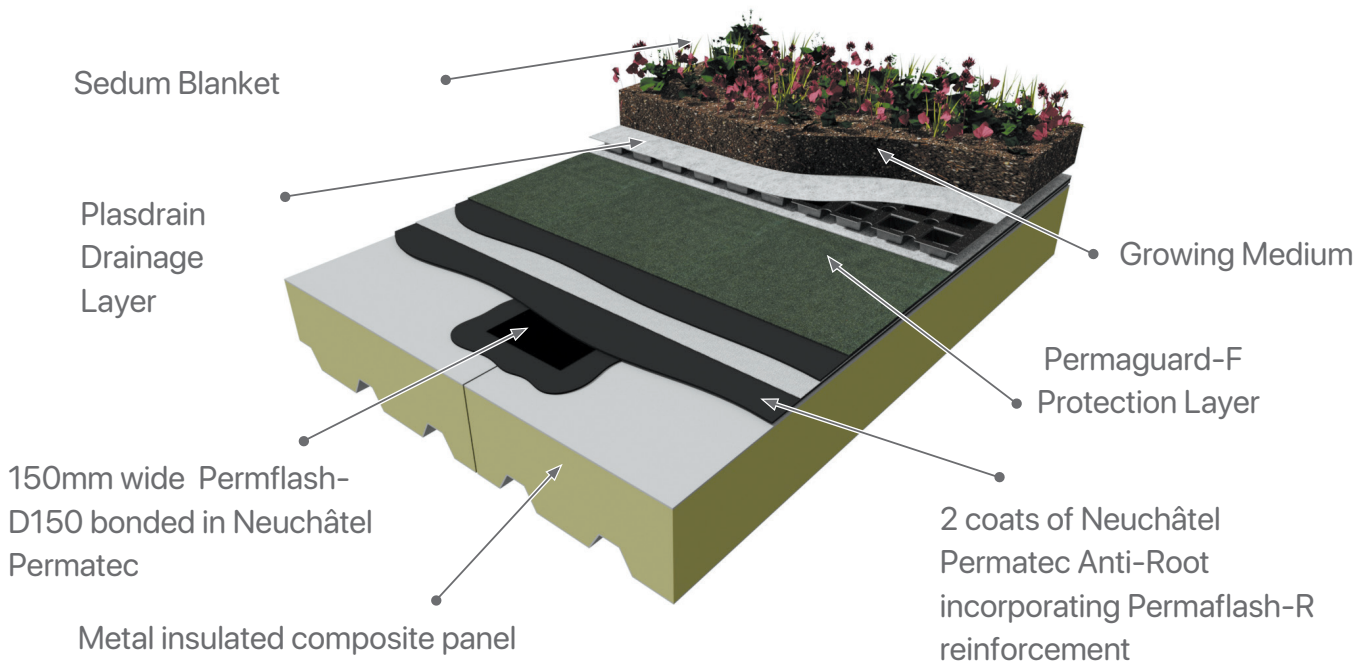
Podium Roof



Intensive Green Roof



Extensive Green Roof



Pre-installation Notes

These guidelines cover the installation of Neuchâtel Permateg Hot Melt Waterproofing System and associated ancillary products.

PLC cannot be held responsible for unknown site conditions or for the performance of materials other than those manufactured, supplied or marketed by PLC.

It must be ensured that the structure is sound and designed to accept the imposed loading of the waterproofing system, the landscaping finishes and associated installation procedures.

Neuchâtel Permateg should only be installed by an Neuchâtel Registered Permateg Installer on behalf of an Neuchâtel Registered or Neuchâtel Approved Contractor.

Adequate protection should be afforded the newly installed Neuchâtel Permateg against damage caused by following trades.

Before the works proceed the roofing contractor must ensure the surfaces to receive Neuchâtel Permateg are acceptable and that the specification conforms to the requirements.

Neuchâtel Permateg can be installed within a wide ambient temperature range. Neuchâtel Permateg must be installed to a dry clean substrate. The application of Neuchâtel Permateg must NOT proceed during inclement weather. Neuchâtel Permateg is not affected by rain, snow or frost immediately after its application.

The proper application of Neuchâtel Permateg is important to the success of the installation. This success is enhanced by proper preparation of the substrate and membrane.

The substrate must be dry and clean of all surface contaminants, such as unapproved curing compounds, form release agents, oils, dirt etc. Any surface irregularities likely to inhibit Neuchâtel Permateg from being applied as a continuous monolithic membrane should be removed and either replaced or properly repaired.

The installer should thoroughly inspect the surfaces over which the Neuchâtel Permateg is to be applied BEFORE commencing with the application. Any deficiencies found should be reported to the Principal Contractor so that they can be corrected. No work should begin until all the deficiencies reported have been rectified.



Neuchâtel Technical Department is available to give suitability and specific advice on **09 441 4595**

Neuchâtel Permateg Personal Protective Equipment (PPE) Recommendations

Neuchâtel Permateg's recommended laying temperature is 160°C-180C and it will adhere to almost anything.

If it comes in contact with unprotected skin it will stick and cause severe burns. It is important to cover all skin areas that could accidentally come into contact with the hot product. The key is to prevent direct contact, with a protective layer that can be removed reasonably quickly.

Users must conduct their own risk assessment in accordance with the Management of Health and Safety Regulations and implement suitable risk controls. However, based on our experience and practical tests, the following personal protection is recommended:

- Full face visor when adding Neuchâtel Permateg into the melter.
- Gloves to EN407 contact heat resistant to class 2 (15 seconds protection) or rubber type, liquid tight, gloves over a cotton glove. It is important that the gloves can be removed quickly.
- A fleece top with full length arms. As an alternative to full length arms, kevlar sleeves (EN407 flammability resistance class 1) can be worn. There should be no gap between the arm cuffs and the gloves.
- Full length trousers worn with the bottom covering boot tops.
- Safety boots with tops high enough so that trouser cuffs always overlap the boot top.



For latest Health and Safety Data Sheets regarding the specified products
www.neuchatel.co.nz

Substrates

Neuchâtel Permaterc can be applied to a number of substrates, as given in the following pages. Application to any other substrate not detailed in this document must be checked with Neuchâtel Technical Services.

Sand and concrete screeds are not generally suitable to receive Neuchâtel Permaterc and should be avoided.

All substrates need to be completely clean and dry in order to achieve the required bond.

Drainage Falls

Neuchâtel Permaterc is British Board of Agrément Certified for use on zero falls decks. In order to ensure a finished zero fall and to comply with the requirements of BS 6229 (Code of practice for Flat roofs with continuously supported flexible waterproof coverings), allowance must be made in the design and construction of the structural deck for deflection, and construction tolerances.

In-situ Structural Concrete Decks to Receive Neuchâtel Permateg

Concrete Specification

In-situ concrete for roof decks shall be specified and produced in accordance with BS EN 206:2013 and installed in accordance with BS13670:2009 and the National Structural Concrete Specification.

Normal Weight and Lightweight concretes are suitable substrates for Neuchâtel Permateg. As defined in BS EN 206:2013, Normal Weight and Lightweight concrete shall have a density of 2000kg/m^3 - 2600kg/m^3 and 800kg/m^3 - 2000kg/m^3 respectively.

Concrete Finish

The concrete roof deck shall be finished with either a Basic or Ordinary Finish which are achieved with a Skip Float (Easy Float) or Power Float as appropriate.

Decks suitable to receive Neuchâtel Permateg should be free from raised float marks or protruding aggregate which will cause thinning of the Neuchâtel Permateg System. Such blemishes will need to be ground flat prior to installing Neuchâtel Permateg.



A phenomenon termed 'reinforcement ripple' can occur where the skip-float action over the surface moves the mortar and coarse aggregate away from above the reinforcing bar. This can fail to return fully causing a slight depression to form over the reinforcing bar position and a slightly raised profile between the bars. Reinforcement ripple, will not normally have a detrimental effect on the installation of Neuchâtel Permateg but additional thickness of material will be required to fill the depressions.



In-situ Structural Concrete Decks to Receive Neuchâtel Permateg

Curing

The rate at which concrete dries will depend on a number of factors but is mainly affected by climatic conditions and the water/cement ratio of the mix. Normal weight concrete typically retains 5% moisture when fully cured and because lightweight concrete aggregates are pre-wetted prior to manufacture, their retained moisture content will tend to be higher. This will not have a detrimental effect on the installation of Neuchâtel Permateg, but may result in an extended drying time.

It is recommended an in-situ concrete deck is allowed to cure to ensure the concrete has achieved its structural design strength, usually 28 days, prior to installing the Neuchâtel Permateg. However, with the agreement of the Principle Contractor, the installation of the Neuchâtel Permateg system can commence earlier subject to a visual inspection and successful Peel Tests witnessed by Neuchâtel.

Laitance, dusting and curing materials are usually restricted to the surface only but will need to be removed in order for the Neuchâtel Permateg to achieve a suitable bond. Light mechanical brushing will normally be sufficient to prepare the surface. However, in more severe cases, shot blasting or scabbling will be required.

Surface Defects

The main causes of a failed Neuchâtel Permateg Peel test is the presence of surface laitance (a thin layer of residue left after water evaporation) or dusting of the concrete surface.

There are a number of potential causes:

- Premature surface moisture loss - this can occur particularly in summer months if the surface is allowed to dry out before sufficient hydration of the cement has taken place.
- Excessive Bleed Water affecting the Water/Cement ratio at the surface
- Frost shortly following placement which will affect the surface paste integrity
- Rain shortly after placement – similar affect to excessive bleed water affecting the water/cement ratio at the surface. Usually noticeable within the finished surface as dimples.
- Curing techniques can also affect the Neuchâtel Permateg bond and procedures involving spray-on waxes should be avoided or if used will need to be removed prior to application.

Laitance, dusting and curing materials are usually restricted to the surface only but will need to be removed in order for the Neuchâtel Permateg to achieve a suitable bond. Light mechanical brushing will normally be sufficient to prepare the surface. However, in more severe cases, shot blasting or scabbling will be required.



Surface Cracks and Joints

Cracks less than 3mm wide do not need any specific preparation but to all structural/ shrinkage cracks 3-6mm wide, and all structural joints 6-12mm wide, a strip of Permaflash-D150 should be bonded centrally over the crack/joint in hot Neuchâtel Permateg, prior to the installation of the full Neuchâtel Permateg System.



Movement Joints

For joints above 12mm wide and structural movement joints, contact the **Neuchâtel Technical Department on 09 441 4595**. Structural movement joints will require a proprietary expansion joint system specifically designed to accommodate the anticipated movement and be installed strictly in accordance with the manufacturer's instructions.



Acceptable Substrates

Pre-cast Concrete

Composite pre-cast concrete decks require a structural concrete topping which, in order to be suitable to receive Neuchâtel Permateg, needs to be finished to the same standard as that specified for cast in-situ concrete.

Where a structural topping is not required, Neuchâtel Permateg can be applied directly to the pre-cast concrete units providing they are finished to a suitable quality. The surface will need to be the equivalent of a skip float or power float finish and the units installed sufficiently level and even in order not to adversely affect roof drainage.

All joints will need to be filled flush with a suitable proprietary screed or levelling compound and covered with Permaflash-D150 bonded centrally over the joints in hot Neuchâtel Permateg prior to installing the full Neuchâtel Permateg system. Where the above conditions can not be achieved, the pre-cast concrete units will need to be covered with a suitable proprietary screed, such as Permascreed. A standard sand & cement screed should not be used.



Permascreed

A proprietary mastic asphalt screed which forms an ideal base to receive Neuchâtel Permateg. It can be used to make good poor quality substrates, overcome bonding issues and where necessary create drainage falls.

Features and Benefits:

- Fast application
- Suitable for levelling out uneven roof decks
- Avoids the extended curing time associated with cementitious materials
- Can be covered or trafficked once cooled to ambient temperature
- Can be laid to a wide range of thickness's and to create drainage falls if required
- Easily prepared to receive Neuchâtel Permateg

Refer to Permascreed Brochure.



Acceptable Substrates

Modified Screeds/Levelling Compounds

Proprietary modified screeds & levelling compounds are available which provide a suitable surface to receive Neuchâtel Permateg.

Consult **Neuchâtel Technical Department on 09 441 4595** as to the suitability of individual products prior to installation.

Plywood

Plywood decks should be in accordance with BS EN 636:2012, BS EN 13986 and BS 5268-2. These BS EN references must be marked on the boards to ensure full compliance with this standard. Unmarked boards should not be accepted, without genuine supporting documentation.

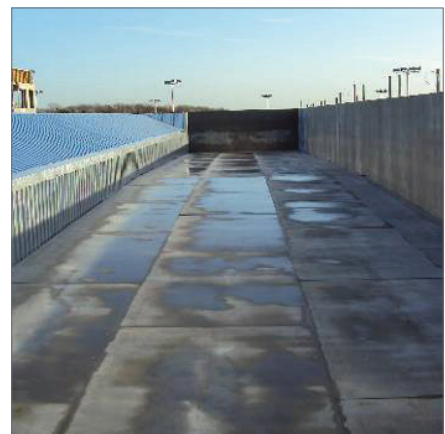
A strip of Permaflash-D150 bonded centrally over all horizontal and vertical plywood joints in hot Neuchâtel Permateg prior to the instalment of the full Neuchâtel Permateg System.



Cement Bonded Particle Boards (Versapanel)

Versapanel Cement Bonded Particle Board is light grey in colour and has a hard smooth flat surface which makes an ideal substrate for Neuchâtel Permateg. Minimum 12mm thickness should be used which is usually fixed to the top of a profile metal structural deck.

A strip of Permaflash-D150 bonded centrally over all horizontal and vertical plywood joints in hot Neuchâtel Permateg prior to the instalment of the full Neuchâtel Permateg System.



Neuchâtel Technical Department is available to give suitability of specific systems on **09 441 4595**

Acceptable Substrates

Insulated Roof Deck Panels

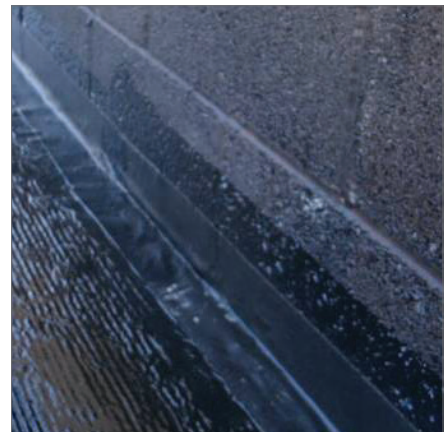
Generally insulated roof deck panels are suitable to receive the direct application of Neuchâtel Permateg. A strip of Permaflash-D150 bonded centrally over all horizontal and vertical plywood joints in hot Neuchâtel Permateg prior to the instalment of the full Neuchâtel Permateg System.

Contact **Neuchâtel Technical Department on 09 441 4595** for suitability of specific systems.



Brickwork/Blockwork Upstands

A strip of Permaflash-D150 must be installed at the base of Brickwork & Blockwork upstands in hot Neuchâtel Permateg prior to the installation of the full Neuchâtel Permateg System.



Metal Upstands

A strip of Permaflash-D150 must be installed at the base of metal upstands (75mm on to the deck and 75mm over the horizontal flange) in hot Neuchâtel Permateg prior to the installation of the full Neuchâtel Permateg System.



Melting Permateg Ecowrap & Permateg Anti-Root

Neuchâtel Permateg must only be melted in a purpose built Hot Melt Melter with mechanical agitation specifically designed for the preparation of hot-applied rubberised bitumen materials. Melters must be thermostatically controlled and be capable of maintaining the Neuchâtel Permateg at the recommended laying temperature of 160°C - 180°C.

The temperature of Neuchâtel Permateg should not exceed 190°C.

The installing operatives must be fully trained in the safe operation of the melter. The melter manufacturer operating instructions must be followed at all times.

At the start of each day, the inside of the melter must be checked for any debris or water, which must be removed before the melting process commences.



Handling Neuchâtel Permateg

Transporting to the Point of Laying

Once the molten Neuchâtel Permateg has reached the required temperature, it needs to be transported to the point of laying in metal lipped buckets, which are an essential piece of equipment in the process of installing Permateg.

Ensure that buckets are placed on a firm level surface during filling. To minimise the risk of spillage, do not overfill the bucket.



Cleaning Buckets

During installation, a build-up of Neuchâtel Permateg will occur to the base and around the sides of the bucket, which will need to be removed from time to time.

The suggested best practice to clean out buckets would be to support an upturned bucket above a bitumen drip tray, which contains approximately 25mm of water. Heat is then applied to the outside of the bucket using a gas torch ensuring that heat is applied uniformly to the base and all sides.

NB: During the heating process, the temperature of the Neuchâtel Permateg in contact with the metal bucket may well exceed the normal application temperature and the necessary PPE needs to be worn to protect against any splashing of the molten material.

The vast majority of the Neuchâtel Permateg will remain solid and the "slug" of material will simply fall into the drip tray.

Once cooled, the bucket can be removed and the Neuchâtel Permateg safely handled and put back into the melter.



Neuchâtel Permateg Peel Test

Bond Checks

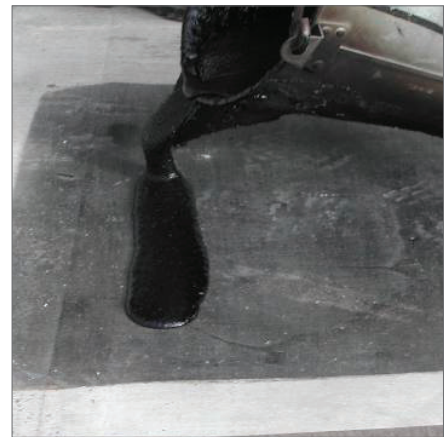
Before Neuchâtel Permateg is applied to concrete decks, Neuchâtel Permateg peel tests must be carried out to confirm the suitability of the deck and to ensure that the Neuchâtel Permateg will satisfactorily adhere to the substrate. If the Neuchâtel Permateg does not bond to the substrate, remedial steps need to be taken (ref page 19), and Neuchâtel Technical Services must be informed.

Peel Test Procedure

The test is carried out by pouring a small amount of Neuchâtel Permateg on to the primed concrete substrate. It should be spread to a thickness of approximately 3mm and cover approximately 300mm x 300mm. Cover with a piece of Permguard-F ensuring that at least one side overhangs the hot Neuchâtel Permateg and press it firmly into the hot Neuchâtel Permateg.

Allow the Neuchâtel Permateg to cool completely before checking the bond strength. The bond to the substrate is checked by folding back the loose edge(s) of Permguard-F and pulling it towards you.

If it is not possible to remove the Neuchâtel Permateg without distorting the membrane, then the substrate is suitable to receive Neuchâtel Permateg and the works can commence.



The Most Common Causes Of A Failed Test

- Substrate is not dry (i.e. concrete has not fully cured or is wet from rain, snow, frost, dew or condensation etc.). Ensure that adequate curing time is allowed or surface is dried prior to repeating the test.
- Substrate is not clean (i.e. dirt, dust, oil, liquid membrane curing compounds, form release agents etc.). These will need to be removed prior to repeating the test.
- Substrate is too smooth and needs to be scabbled
- Weak surface laitance, which will need to be removed prior to repeating the test
- Primer was not allowed to dry properly - Ensure that the primer is fully dried prior to repeating the test but make sure that it is allowed to dry naturally. Gas torches must not be used to dry primer.

If the Neuchâtel Permateg has a good bond to the substrate initially or after corrective remedial steps have been taken to improve the bond, the application of the membrane can proceed. Frequent bond checks throughout the application of the membrane should be conducted to ensure an adequate bond is being obtained.

If bonding problems persist after corrective action has been taken, contact **Neuchâtel Technical Department on 09 441 4595**.



Successful peel test example



Failed peel - easily pulled from the substrate



Neuchâtel Technical Department is available to give suitability and specific advice on **09 441 4595**

Priming the Area

Primers

Concrete, brickwork and blockwork substrates must be primed with Permatec Polymer Primer or Permatec High Penetration Primer (page 7).

Permatec Primers can be applied by brush, roller or squeegee. Typical curing time is 1 hour for Permatec Polymer Primer and four hours for Permatec High Penetration Primer, depending on ambient temperature.

Allow the primer to cure naturally - do not use gas torches to cure the primer.

Once cured, the normal use of a gas torch to dry moisture from the surface is acceptable.

Neuchâtel Permatec compound must not be applied to wet primer.

Plywood, Metal and Cement Particle Boards do not normally require priming.



Neuchâtel Permateg Installation and Detailing

General

Neuchâtel have a comprehensive range of Neuchâtel Permateg Details, which are available from Neuchâtel Technical Services.

All detailing works are to be carried out as separate items ideally before installing Neuchâtel Permateg over the main field area of the roof.

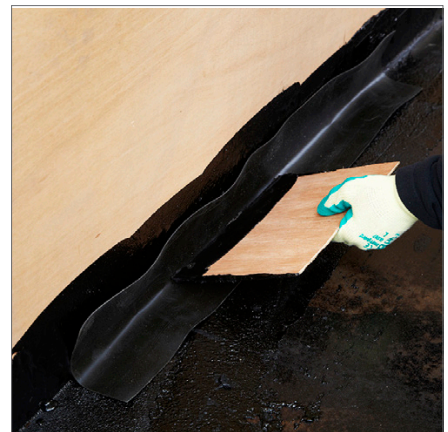
All upstand details should be a minimum of 150mm above finished surface levels.

All surfaces to which Neuchâtel Permateg is to be applied must be clean and dry.



Permaflash-D150 Application

At all changes in substrate materials, all structural/shrinkage cracks 3-6mm wide, and at all structural joints 6-12mm wide, a strip of Permaflash-D150 must be fully bonded centrally over the transition in hot Neuchâtel Permateg, prior to the installation of the full Neuchâtel Permateg System.



Application to upstands

Using a spreader made of hardboard or thin plywood (approximately 200mm x 300mm) the hot Neuchâtel Permateg compound is poured in a line along the base of the detail. The material is then pulled up the vertical surface to desired height using the spreader. Three passes will ensure a nominal coat thickness of 3mm. A nominal 200mm wide strip of Neuchâtel Permateg must also be applied to the deck at the base of the upstand to receive the Permaflash-R Polyester Reinforcement.



Detailing Continued

The Permaflash-R Polyester Reinforcement is embedded into the Neuchâtel Permateg compound whilst still tacky. The Permaflash-R must extend at least 150mm onto the flat. Laps in the Permaflash-R should be at least 75mm and fully sealed by the Neuchâtel Permateg Compound.



Taking the spreader used for the first coat, the second coat is applied in the same manner ensuring complete coverage of Permaflash-R at the nominal coating thickness of 3mm.



The Permanguard-F protection layer should be applied to the hot Neuchâtel Permateg as quickly as possible ensuring no air pockets.

The Permanguard-F must extend at least 75mm onto the flat.



Laps in Permanguard-F protection are to be minimum 75mm and fully sealed using hot Neuchâtel Permateg.

Exposed Neuchâtel Permateg upstands must always be protected by Permanguard-M or Permatorch Anti-Root Mineral Surfaced Membranes.



Rainwater Outlets

Metal rainwater outlets, fitted with damping rings and pebble guards are recommended for use with Neuchâtel Permateg.

They must be securely fixed to the deck and correctly connected to down pipes. The substrate around the outlet bowl and flange should be recessed to allow the outlet to be lower than the deck surface.



Prior to the installation of the full Neuchâtel Permateg System, Permaflash-D500 should be bonded in hot Neuchâtel Permateg to the substrate and into the bowl of the rainwater outlet. Permaflash-D500 should extend at least 50mm on to the substrate. Smooth out wrinkles and press into Neuchâtel Permateg to exclude air.



The first coat of Neuchâtel Permateg is then applied followed by the Permaflash-R which should be embedded into the Neuchâtel Permateg whilst it is still hot.

The Permaflash-R should be continued into the bowl of the outlet.



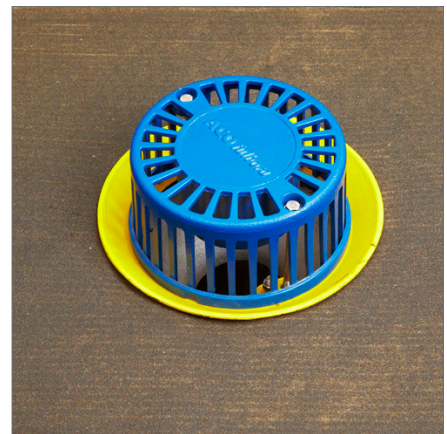
Rainwater Outlets

The second coat of Neuchâtel Permateg is applied as soon as possible and must fully cover the Permaflash-R Reinforcement. Spread evenly, the second coat is also applied at a nominal thickness of 3mm.

No Permaflash-R should be left exposed at the end of each working day or if rain is expected.

The second coat of Neuchâtel Permateg must be covered by the Permaguard-F Protection Layer as quickly as possible ensuring that the protection sheet is dressed sufficiently into the bowl of the outlet so to be trapped beneath the clamping ring.

Finish the outlet with clamping ring and gravel guard.



Neuchâtel Permateg Pitch Pockets

Neuchâtel Permateg Pitch pockets should be used to waterproofing protrusions such as handrail stanchions, man safe posts, I-beams etc.

A minimum 50mm high galvanised metal former is bonded in hot Neuchâtel Permateg around the protrusion. The former can be any shape and size but must extend at least 20mm beyond the base of the protrusion and must be deep enough to ensure a minimum 10mm covering of Neuchâtel Permateg over the over fixings.

The metal former is secured by straps of Permaflash-D150 bonded in hot Neuchâtel Permateg. If necessary, mechanical fixings can also be used to secure the former.

The former is then filled flush with hot Neuchâtel Permateg. Depending on size, several pours may be required leaving the Neuchâtel Permateg to cool each time.

Once filled Permaguard-F should be applied to the top and sides of the pitch pocket and bonded to the surrounding flat to complete the detail.



Metal Pipe Flashing

Ensure that metal pipes are free from grease, rust etc. Clean with a wire brush.



A strip of Permaflash-D150 is applied around the base of the pipe fully bonded in hot Neuchâtel Permatec.



Metal Pipe Flashing

Two coats of Neuchâtel Permateg incorporating Permaflash-R are applied to the pipe.



The height of the Neuchâtel Permateg system should be at least 150mm above the finished roof level.



Exposed pipe flashings must be protected with Permaguard-M Protection Sheet which is applied by controlled torch application and the upper edge protected with a cover flashing to complete the detailing.



Plastic Pipes

A metal pipe sleeve should be fitted around plastic pipes to receive the Neuchâtel Permateg Pipe Flashing. The height of the pipe sleeve should be at least 150mm above the finished roof level, with the upper edge protected with a cover flashing fixed to the pipe.

Neuchâtel Permateg Installation - Horizontal Surfaces

General

The application of the Neuchâtel Permateg compound should be conducted in a carefully planned, methodical manner to assure proper control of the membrane's thickness.

Evenly applied to a nominal thickness of 6mm in 2 coats, approximately 7kg of Neuchâtel Permateg compound should cover a square metre of substrate. This is a guide so the installer can monitor the amount of Neuchâtel Permateg used against the square metres covered.

This method is good as a general check to see if the application rate is correct. However, regular thickness tests must always be carried out as detailed on page 39.

First Coat Neuchâtel Permateg

The spreading of Neuchâtel Permateg is carried out using a rubber bladed squeegee. Pour a bucket of hot Neuchâtel Permateg along the one edge of the area to be covered. As a guide, a standard bucket of Neuchâtel Permateg will cover an area of approximately 3.0m x 1.0m at a nominal 3mm thickness.

Using the squeegee, pull the hot Neuchâtel Permateg compound towards you in a methodical manner ensuring that it covers the substrate beyond the width of the Permaflash-R Reinforcement, which is 1m wide. Very little downward force should be applied to the squeegee.

Once the whole bucket has been brought towards you, push the molten material back over the area. Now pull the entire line of hot Neuchâtel Permateg compound back across the grid to achieve the required thickness of 3mm (nominal). Do this over the entire grid. Make at least three passes with the squeegee. This is the most effective way to control the correct thickness of the Neuchâtel Permateg Membrane.



Reinforcement

After each bucket, Permaflash-R should be embedded into the compound whilst it is still hot. Unroll the Permaflash-R and lay it into the Neuchâtel Permateg compound, keeping it pulled tight to minimise folds and wrinkles. Do not "pour and roll" the Permaflash-R into the hot Neuchâtel Permateg.



As the Permaflash-R is being installed, it should be brushed into the hot Neuchâtel Permateg, taking care to avoid air pockets, folds or wrinkles in the fabric.



Once one row of the Neuchâtel Permateg membrane and fabric has been applied, another row can be started. The Neuchâtel Permateg membrane should overlap the fabric from the preceding row by approximately 100mm so that the next roll of Permaflash-R can be embedded into the membrane to form a minimum fully bonded 75mm overlap between the two sheets of fabric.



Adding Second Coat Neuchâtel Permateg

The second coat of Neuchâtel Permateg should be applied as soon as possible using the same procedure for the first coat to a nominal thickness of 3mm and must fully cover the Neuchâtel Permaflash-R reinforcement.

Ensure that the Permateg membrane is taken beyond the width of the Permanguard-F protection sheet on both edges, which is also 1m wide.



Unroll the Permanguard-F protection sheet in to the area of installed Neuchâtel Permateg whilst it is still hot and tacky. Do not apply Permanguard-F using the "pour and roll" method.



With subsequent rows, ensure that the second coat of Neuchâtel Permateg overlaps on to the preceding row by approximately 100mm so to form a minimum 75mm sealed lap.

Using a wide blade scraper, make sure that the laps in the Permanguard-F Protection Sheet are fully sealed.

Permaflash-R must not be left exposed at the end of each day or if rain is expected.



Thickness testing

Achieving the required thickness

To ensure that the required coverage rate is being achieved, Neuchâtel recommends that the thickness of the installed Neuchâtel Permateg system is checked every 25m² using a tyre tread depth gauge.

Place the gauge on the upper surface of the horizontal protection sheet and force the plunger through the Neuchâtel Permateg system down to the structural deck. Without removing the gauge, note the thickness.



Record the thickness

Record the result next to the test point.

The thickness of the Neuchâtel Permateg, minus the protection sheet, should be a nominal 6mm, but never less than 5mm. Therefore the system thickness, including the protection layer, should be in accordance with the following table.

Protection Layer	Thickness	Nominal Total System Thickness	Minimum System Thickness
Permaguard-F	1.5mm	7.5mm	6.5mm
Permaguard-M	3.5mm	9.5mm	8.5mm
Roofgarden AD/F	4.0mm	10.0mm	9.0mm
Permaguard-PB	3.2mm	9.2mm	8.2mm
Permaguard-HDPB	3.0mm	9.0mm	8.0mm

Ensure that the hole made by the gauge plunger is sealed by applying pressure to the surface.

The rounded end of a screwdriver handle is ideal for this.

NB: Failure to achieve the specified minimum system thickness will result in overlaying the identified roof area with an additional coat of Neuchâtel Permateg and specified protection sheet.



Neuchâtel Technical Department is available to give suitability and specific advice on **09 441 4595**

Post Installation Check

Electronic Leak Testing

Unless specifically approved otherwise by Neuchâtel Technical Services, on completion the integrity of the Neuchâtel Permateg system must be confirmed by means of an electronic detector system to show that the waterproofing is 100% free from punctures and defects.

The Roofing Contractor should include a sum for such a test within his quotation.

The testing should be carried out immediately before the application of the insulation and surface finishes.

If any defects are discovered, the locations should be clearly identified to allow the Neuchâtel Permateg Registered Contractor to carry out the necessary repairs.

The areas should be retested to verify the integrity of repair.

NB: The issue of the Neuchâtel guarantee is conditional upon the provision of a leak test certificate.

Protection from Following Trades

Completed areas of Neuchâtel Permateg must be protected from damage prior to installing the specified surface finishes.

The system must be protected against damage caused by spillages of solvents, oil, fuels etc and sharp objects such as nails, fixings, trims, glazing panels etc. Where it is necessary to temporarily place plant materials or equipment directly on the Neuchâtel Permateg waterproofing, a minimum 18mm plywood should be used as protection.



Repair of Damaged Areas

Easily Repaired

Damaged areas of the completed Neuchâtel Permateg waterproofing can be easily repaired.

Where possible, the protection layer should first be carefully removed, exposing not only the damaged membrane but also at least 75mm in all directions from it. If the protection layer can not be removed without causing further damage to the underlying Neuchâtel Permateg, the upper surface should be carefully heated with a gas torch to "sweat" the bitumen within it.

Hot Neuchâtel Permateg can then be applied to the damaged area extending at least 75mm on to the surrounding protection area. The Neuchâtel Permateg should be applied in one coat minimum 3mm thick followed by a new protection layer embedded into the membrane whilst it is still hot and tacky.



Application Summary

- Ensure that surfaces are clean & dry
- Carry out bond test on in-situ structural concrete or screeded decks
- Apply Neuchâtel Permateg Primer to concrete, brickwork and blockwork substrates
- Maintain Neuchâtel Permateg within the application temperature range 160-180°C Ensure Neuchâtel Permateg is applied at nominal 6mm thick in 2 coats
- Ensure minimum 75mm fully bonded laps in reinforcement and protection sheets
- Carry out thickness checks every 25m²
- Protect completed areas against damage



Neuchâtel Permaterc Flat Roof Inspection, Maintenance and Guarantee Guidance Notes

1.0 General

General flat roof maintenance is essential to obtain the maximum performance and ensure the longest life expectancy for the Neuchâtel Permaterc waterproofing system as a whole. It is also an integral part of our guarantee offer for the project. Any deficiencies should be reported immediately to PLC.

2.0 Access

Access to the roof must only be allowed by arrangement with and under supervision of the Building Manager or the person responsible for building maintenance, in accordance with the Construction (Design & Management) Regulations 2015.

2.1 All personnel given permission to access the roof must be fully advised of the health and safety procedures required by the site or that of the individual roof concerned. Where roof working/access, other than foot traffic is required, adequate protection must be provided to avoid damaging the surface finishes, insulation and underlying Neuchâtel Permaterc Waterproofing.

3.0 Protection

During routine maintenance to plant or the building fabric, the flat roofing system must be protected against damage caused by spillage of solvents, oil, fuels etc and sharp objects such as nails, fixings, trims panels etc. Where it is necessary to temporary place plant materials, or equipment directly on the Neuchâtel Permaterc Waterproofing, we would recommend the use of minimum 18mm plywood as protection.

NB: The completed roof must not be used as a storage area)

4.0 Alterations

Additional units, penetration or fixings that may be required should be referred to PLC or the original roofing contractor prior to any works being carried out.

4.1 Any approved additional waterproofing works must be carried out with the full knowledge of PLC and ideally by the original Registered Contractor.

4.2 Any works to the roof must take account of the requirements of any horticultural or protective finishes, and provision made to remove, correctly store and reinstate drainage/ filter layers, growing medium and plants, where applicable.

5.0 Routine Inspections

The roofs should be inspected twice yearly, preferably in the spring and autumn, and/or after extremes of weather conditions. Inspections should be carried out generally in accordance with BS 6229, with particular attention to the following items:

- 5.1 It is important to check that roof outlets are functioning and gratings are not blocked. Remove debris from the roof but do not flush silt or dead leaves down outlets. In areas where taller trees are adjacent to the roof, inspections may be required more frequently.
- 5.2 Note the general condition of exposed Permateg waterproofing and report any damaged areas immediately.
- 5.3 Check waterproofing to any roof light kerbs. Check any rooflight domes for signs of damage or deflection.
- 5.4 Check perimeter details and upstands, ensuring that any metal cappings, flashings, edge trims and mortar pointing to chase details are secure.
- 5.5 Check flashings to any expansion joints and that cappings are secure.
- 5.6 Check upstand flashings to plant support legs/upstands.
- 5.7 Check upstands and flashings to pipe penetrations.
- 5.8 Examine all mastic seals and repair/replace as necessary.
- 5.9 Check walkways and around access points to ensure damage/displacement has not occurred to walkway or concrete paving.

6.0 Accidental Damage

In the event of accidental damage occurring to the waterproofing, the installing contractor and/or PLC should be notified immediately in order that a practical solution to the problem can be agreed and any remedial actions taken. Failure to make contact with Neuchâtel and/or the contractor could invalidate any guarantee offered.

7.0 Roof Repairs

Permateg Roofs which are under guarantee by PLC should only be repaired by the installing contractor, with full design reference to Neuchâtel Technical Services Department.

See guidance notes on the guarantee document.



Neuchâtel Technical Department is available to give suitability and specific advice on **09 441 4595**



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