



Nuraply 3PM Roofing Membrane Installation Manual

Nuralite Waterproofing Limited
www.nuralite.co.nz

2022 Edition 1



NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

TABLE OF CONTENTS

1.	Statement of Use & Limitations	5
2.	Health and Safety	7
3.	Project Administration/Supervision.....	8
4.	Nuraply 3PM Products	9
5.	Substrate Readiness	15
6.	Installing the Nuraply 3PM system	17
a.	Installing the Nuratherm system.....	17
b.	Installing the Nuraply base layer	19
c.	Installing Cap Sheet.....	22
7.	Trouble Shooting Problems and Repairs	25
8.	Technical Datasheets	26
9.	Installation details	26

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Nuralite roofing and waterproofing systems are intended for application by trained and approved installers. Contact details of approved applicators are available at www.nuralite.co.nz/Applicator. These notes are a technical guide to the application of the Nuraply 3PM range. The Nuralite organisation also maintains a team of skilled technical representatives who are prepared to demonstrate the correct application of Nuraply 3PM on site or to discuss any problems which may arise regarding its use.

Please note that Nuraply has a long product defects warranty period, and every precaution must be taken to avoid any possible installation faults. Application according to these guidelines must be insisted upon by the Applicator to ensure that full benefits of the warranty period are maintained.

TECHNICAL ADVICE

For advice on unusual or abnormal conditions or details, please contact Nuralite Waterproofing Ltd,

09 579 2046

Email: info@nuralite.co.nz

OTHER REFERENCE DOCUMENTS

This manual is one part of the full technical documentation for the Nuraply 3PM system.

Technical literature (available at www.nuralite.co.nz)

- Nuraply 3PM detail drawings
- Material Safety Datasheets
- Technical Datasheets

Specifications

- Generic Nuraply 3PM specifications
- Project specific specification

Document Control

Issued	John Simmons	Jan 2015	2015 Edition V1
Revised	John Simmons	June 2015	2015 Edition V2
Revised	John Simmons	Sept 2015	2015 Edition V3
Revised	John Simmons	Oct 2015	2015 Edition V4
Revised	John Simmons	Jan 2016	2016 Edition V1
Revised	John Simmons	Feb 2016	2016 Edition V2
Revised	John Simmons	Apr 2016	2016 Edition V3
Revised	John Simmons	Apr 2016	2016 Edition V4
Revised	John Simmons	Apr 2016	2016 Edition V5
Revised	John Simmons	Apr 2016	2016 Edition V6
Revised	John Simmons	Jun 2016	2016 Edition V7
Revised	John Simmons	Dec 2016	2016 Edition V8
Revised	John Simmons	Mar 2019	2019 Edition V1
Revised	John Simmons	Oct 2022	2022 Edition V1

The only person authorised to change this plan is the Managing Director, John Simmons.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

The Nuraply 3PM Roofing Membrane System complies with the New Zealand Building Code.

As an explanation of compliance with Building Code criteria under s269 (1) of the Building Act 2004

Clause B1.3.2	Compliance has been established by testing to ensure that tensile strength, elongation, compression, and seam strength are adequate.
Clauses B1.3.3 (e) and (m)	Compliance has been established with testing to ensure resistance to water absorption, hydrostatic pressure, differential movement over substrate joints are adequate.
Clause B2.3.1 (b)	The membrane is part of the envelope building element and assessed for 15-year durability period based on in-service history in excess of this period.
Clause B2.3.2 (a)	The membrane is not installed over elements with lesser durability than 15 years.
Clause E2.3.1	The roof membrane system will repel water from entering the building and roof design will ensure it can shed precipitated moisture and melted snow.
Clause E2.3.2	The membrane system has been tested for water absorption, vapour transmission, hydrostatic pressure and joint seam strength to satisfy this requirement.
Clause E2.3.6	The membrane system provides for cross flow venting or for ceiling space ventilation.
Clause E2.3.7 due allowance has been given to;	
(a)	The consequences of failure have been considered through specified repair and maintenance requirements, multiple drainage paths and the ability of the system to tolerate ponding (standing water three days after cessation of flow)
(b)	Being a double layer system, the effects of any uncertainty in or from the sequence of construction can be accommodated.
(c)	Variation in the properties of materials and in the characteristics of the site are accommodated. The membrane has a tolerance for substrate variations and environmental factors.
Clause F2.3.1	No gases liquid or particles are emitted by materials that could give rise to harmful concentrations on surfaces or in atmosphere of any space.

Compliance with other clauses have been considered and found not applicable.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

1. Statement of Use & Limitations

Use

Nuraply 3PM double layer torch on membrane system provides a durable waterproofing system for installation by approved installers, on new and existing roofs and decks of any size. Installation is in accord with this manual Nuralite 3PM Roofing membrane Installation manual 2022 Edition 1 available on the Nuralite website and the Nuraply Waterproofing Membrane Building Product Quality Plan 2022 v1.

On a structure complying with the New Zealand Building Code, it may be installed directly onto the following substrates:

- H3.2 treated Timber*, including plywood sheets and reconstituted wood panels (Strandboard), substrates complying to AS/NZ 2269 (2012) (directly or with Nuratherm PIR Boards between) with treated timber trim, battens and framing where timber is detailed and Nuralite product is directly applied or,
- Concrete substrates complying to NZS 3101 (2006) (directly or with Nuratherm PIR Boards between) or,
- NPM 900 metal tray decks with Nuratherm PIR boards between.

Nuraply 3PM system is a tough, reinforced, bituminous waterproofing membrane suitable for light maintenance foot traffic. It may be installed on a cold roof with insulation installed (by others) below the substrate or as a warm roof (known as Nuratherm) with Nuratherm insulation installed (by Nuralite applicator) above the substrate

The system may be installed in all NZS 3604 Wind Zones, up to and including Extra High.

Limitations

The design and construction of the substrate, framing timber, metal over flashing, cladding, fascia, control joints, junctions and allowances for ventilation, movement, condensation control, snow and fire safety provisions is specific to each building, and therefore is the responsibility of the building designer and building contractor. These matters are all outside the scope of this CodeMark.

* Timber products must not be treated with LOSP (light organic solvent preservative) nor CuN (copper nitrate). Timber substrates must be installed in accordance with Manufacturer's instructions and be warranted as a suitable substrate for membrane roofing or decking.

Rigid Air Barrier (RAB) may only be used as a substrate when used for upstands behind cladding.

IKO Nuratherm has class E fire resistance in accordance with EN-13501-1. The insulation complies with AS 2122.1-1993. The plate has a low to zero smoke emission rate and does not melt or drip. On 0.75mm metal tray deck the system is rated 1-S NZBC Clause C3.4(a) using ISO 9705:1993 (Fire class 'end use' according to 13501-1: B-s2,d0 (steel deck))

Any construction details outside those listed in this manual are outside the scope of this CodeMark.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

When used on existing projects, it is the responsibility of the property owner to have the structure and substrate assessed by a suitably qualified person and to the satisfaction of Nuralite Waterproofing Ltd. For this CodeMark to be applicable the substrate material is limited to only those approved within this manual.

The slopes allowable are clearly set out in the table on page 9. For low slope roofs the designer of the substrate should consider the intended use of the roof or deck to ensure continued compliance with the Building Code. While the membrane is tolerant of ponding (standing water that remains after 3 days of cessation of flow), excessive ponding is undesirable as it contributes loads and encourages dirt buildup by reduced rain washing

While the membrane has been assessed for melted snow, any junctions above the membrane must be considered by the designer in relation to snow and hail and the behavior of melt water.

Potable water may be collected off the finished roof surface though it is recommended that Nuraglaze is applied, and that various filters and first flush diverter are installed.

Not for use as a directly trafficable deck surface. On decks the membrane must be protected from pedestrian traffic with a floating tile or timber deck surface laid onto Nurapads or Nurajacks.

The membranes must be installed only by Nuralite Waterproofing Ltd approved installers.

Attention must be paid to application temperature ranges and the necessary requirements for storage of products.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

2. Health and Safety



An applicator's wellbeing is paramount.

Do not enter a worksite, commence work, or continue working if:

1. You have not been adequately trained by your employer
2. You have not been briefed about the workplace hazards by the site manager
3. You do not have proper clothing, footwear, safety & workplace equipment.
4. You witness unsafe practices, or you believe the workplace is unsafe.
5. You see wet or rainy conditions



Use your common sense and speak up if anything concerns you.

A few points of relevance to Applicators are:

1. Applicators must wear protective clothing including a hard hat and suitable footwear. Heat resistant gloves must be worn to reduce the risk of torch flame and heated bitumen coming into contact with skin. Footwear should have soft, non-slip soles.
2. Working with a gas torch is hazardous and requires care both for the Applicator, other associated personnel, and other persons on the work site.
3. Daily checks of all gas equipment to ensure that it is in good working order and safe for use. All personnel who use this equipment should be trained in its proper use and maintenance.
4. As torch-work can create the risk of fires, including smouldering fires, the Applicator must be trained in fire prevention and the proper extinguishing of fires. On every job fire extinguishing equipment must be kept close to the Nuraply 3PM installation area and be in good working order.
5. First aid equipment must be provided on site and work personnel trained in first-aid procedures.
6. Experience and training for working at height is important, including understanding restraint procedures. Nuraply 3PM systems are normally applied to either roofs or decks, which are usually 2.5m or more above the ground. All work carried out in such situations require sufficient safety and protection to avoid falls.
7. All applicators must have a current Site Safe passport.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

3. Project Administration/Supervision

Nuralite & you, the applicator, are in a partnership designed to achieve the installation of many high quality Nuraply 3PM systems.

Nuralite works hard to get jobs specified by Architects. The Applicator is responsible for the quality control and the installation of the Nuraply 3PM membrane systems and quotations.

All work will rapidly dry up if the application is not performed in a professional manner. Not only must the workmanship be high quality, but the service and support to the builder and project manager should equal that to ensure we all get repeat business.

Nuralite recommends a pre-inspection and/or a pre-job meeting of all parties involved with the Nuraply 3PM system to identify any areas of concern. It is important for a successful installation to resolve and clarify any issues or project requirements, work programme and issues with other trades, the project documentation required product storage, and site health and safety matters.

Before commencing work, the Applicator must determine:

- That all the building consents have been issued and the specifications and detailed drawings are workable and suitable for the project
- That there is nothing that will compromise the Applicator's required responsibility under the NZ Building Code or your ability to follow these instructions and thus issue a warranty on your workmanship
- That no existing conditions at the site prevent the Applicator from performing in a professional and safe manner
- That the product to be installed is as per the official consent documents.
- A substrate readiness checklist has been completed by the main contractor (builder) (see section 4)



If you have any concerns about the project, your working conditions or the substrate preparations then raise them with the site manager, your employer or a Nuralite representative.

All applicators have the right to refuse to commence work until they are satisfied that they can complete the job safely and to the highest standards.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

4. Nuraply 3PM Products

The complete Nuraply 3PM system has several installation methods and base sheet options which are selected based on factors such as the substrate material and the risk of moisture vapour entering the system and causing condensation.

All projects are carried out with a double layer of membrane

Product Selection and Limitations

Substrate	Timber	Concrete	Existing Membrane	Concrete with Tapered Boards or Flat Nuratherm	Timber with Nuratherm	NPM900 with Nuratherm
Minimum Finished Fall (excluding gutters) (A)	1:80	1:80	1:80	1:80	1:80	1:80
Gutters	1:100	1:100	1:100	1:100	1:100	1:100
Substrate Comments	Using 17mm (roofs) or 21mm (decks) plywood, rafters at 600 centers, nogs at	Create required slope with a screed. Wait for concrete and screed to cure.	Confirm substrate is sound	Tapered boards are 1:60. Nuralite can assist with layout.	Create required slope in the timber	Create required slope in the NPM900
Adhesive/Primer						
Nuraflux	Yes	Yes	Yes	Yes	Yes	Yes
Vapour Barrier						
Nuraply ALU				Yes	Yes	Yes
Insulation (B)						
Nuratherm			Yes (C)	Yes	Yes	Yes
Tapered Nuratherm at 1:60			Yes (C)	Yes		
Insulation fixing						
IKO Fix			Yes		Yes	Yes
Nurabond Hi Foam PU				Yes		
Basesheet						
Nuraply 3PB	Yes					
Nuraply 3PB-SA	Yes					
Nuraply 3PV		Yes	Yes			
Nuraply 3PV-SA		Yes	Yes	Yes	Yes	Yes
Capsheets						
Nuraply 3PM	Yes	Yes	Yes	Yes	Yes	Yes
Nuraglaze	Optional	Optional	Optional	Optional	Optional	Optional
Substrate Venting						
Nuravents	Yes	Yes	Yes	No	No	No
Notes						
A) Roofs must have a minimum finished fall of 1:80. This is the fall that is achieved on the roof at the completion of construction. Designers should make allowance for construction tolerances and deflection to ensure the falls are achieved						
B) The entire system, vapour barrier, insulation and waterproofing is known as a Nuratherm Warm Roof						
C) Nuratherm may be installed over existing roofs to improve the insulation of the building						

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Base sheets

On Timber, Strand Board and RAB

NURAPLY 3PB provides a nominally 3mm thick 10m long x 1m wide polymer modified bitumen sheet, first layer in double-layer applications on timber substrates. Heat welded onto Nuraflux primed substrate with heat welded lap joints.

(Labelled: Nuraply 3P)

NURAPLY 3PB-SA provides a nominally 3mm thick 10m long x 1m wide polymer modified bitumen sheet, first layer in double-layer applications on timber substrates. Self-Adhered onto Nuraflux primed substrate with heat welded lap joints.

(Labelled: IKO Base Stick F/SA 10m)

On Concrete or existing Nuralite membrane

Nuraply 3PV Sheet is a nominally 4mm thick, 7.5m long x 1m wide polymer modified bitumen sheet, first layer waterproofing, heat fused, and 40% bond pattern integral vapour diffusion underside, to avoid vapour blisters from substrate moisture. Heat welded onto Nuraflux primed substrate with heat welded lap joints.

(Labelled: IKO Base Quadra F/F 7.5m)

On Nuratherm PIR panels

Nuraply 3PV-SA Sheet is a nominally 3mm thick, 10m long x 1m wide polymer modified bitumen sheet, first layer waterproofing. With a 40% bond pattern integral vapour diffusion underside, to avoid vapour blisters from substrate moisture. Self-adhering onto Nuratherm PIR insulation panels substrate. Heat welded lap joints.

(Labelled: IKO Base Quadra F/SA 10m)

Cap sheets

Mineral Chip

Nuraply 3PM Sheet is a nominally 4mm thick, 7.5m long x 1m wide, polymer modified bitumen sheet. Heat fused onto the base sheet underlay with heat welded lap joints, and a prefinished mineral chip upper surface.

Nuraply 3PM is available from stock in three colour options: White, Slate, Charcoal

A thin coating of Nuraglaze may be applied to enhance the systems appearance and is a recommendation if potable water is being collected.

(Labelled as)

IKO Carbon Turbo 7.5m (Charcoal)

IKO Polygum 7.5m (White)

IKOGum 4 AR/F 7.5m (Other))

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Additional Components Supplied by Nuralite

Nuraply ALU

Roofing membrane with glass fibre reinforcement, topside finished with polyester reinforced aluminium foil and under-side coated with self-adhesive SBS modified bitumen. Applicable as vapour barrier for roofing systems in buildings with high humidity conditions. (*Labelled: IKO Shield PLUS ALU/SA 25m*)

Nuratherm

Nuratherm is a 100 % CFC, HCFC and HFC-free insulation board with a core in hard polyisocyanurate foam, coated on both sides with a multi-layer gastight aluminium complex. (*Labelled: IKO Enertherm*)

The entire Warm Roof system of vapour control, insulation and membrane waterproofing is known as Nuratherm Warm Roof.

IKOFix

Polypropylene telescopic sleeves for fixing membrane and insulation. Screws supplied in lengths to suit the installed insulation.

Nurabond High foaming PU Adhesive

A permanent elastic high performance moisture-cured single part polyurethane adhesive with light foaming capacity for bonding bituminous roofing membranes, vapour control layers and rigid insulation boards. For use on various substrates including profiled metal decking, existing bitumen membranes, concrete, timber etc. (*Labelled: IKOPro PU Adhesive*)

Nuraflux Primer

For substrate priming to prepare the surface and improve adhesion (*Labelled: IKOPro QuickDry Primer, Nuraflux No10, IKOPro WB*)

Accessories Supplied by Nuralite

Nuraglaze

Clear acrylic glaze to seal chips and retain appearance 15L pails with coverage of 10m²/litre

Nuralite Bitumen Fillet

A 25mm triangle of bitumen that may be installed at internal corners instead of building a mortar fillet.

Nurajacks & Nurapads

A Tile or Paving support system that is height adjustable and includes a self-levelling head to automatically compensate for the deck gradient or any difference in the level of the substrate. Allows the tile or timber deck to be independent of the waterproofing membrane.

Nuratrim

A metal edge that provides a mechanical fixing of the membrane and water check. Designed to be installed on roof edges, verges, and parapets without a slope.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Nuralite Fixing Plate

Integrated fixing point for aluminium channels. Designed to hold solar panels or light weight plant, without penetrating the membrane.

Nuravent

Nuravents are made of aluminium. They are simple mushroom shaped vents that can be purchased in powder-coated colours to blend in with the Nuraply roof. Install at high and low points to promote air flow in roof cavity, which should have interconnecting ventilating passages.

Metal Scuppers & Sumps

Fabricated for use with Nuraply 3PM. Available in 80, 100 and 150mm sizing with alternative dimensions available on request.

Termination Bar

Metal strip predrilled to allow mechanical fixation of the Nuraply 3PM membrane.

Goose Neck

Preformed cable ducting. Available with 100mm extensions.

MS Detail liquid flashing

MS Detail is a solvent-free, coloured, liquid, single-component waterproofing coating based on MS Polymer technology.

Nuralite outlets and overflows

A series of roof outlets which provides a robust means of connecting a roof system to an outlet drain. For use on flat roof applications for either commercial or residential buildings.

IKOPro Stickall

IKOPro Stickall is a dense, all weather, bituminous sealing glue that remains plastic under normal temperatures and adheres well to most building surfaces.

Nuradeck

A tough liquid-applied, elastomeric, fibreglass reinforced waterproofing system suitable for detailing terminations and flashings.

Lockin' Pocket flashing system

A prefabricated inter-locking flashing system that is easily assembled on-site and filled with fast setting, solvent free, Hurricane Force Universal Sealer. The system becomes waterproof within minutes of application. Lockin' Pocket is designed to seal technically challenging roof penetrations where field flashing may not be practical. When installed and filled with Hurricane Force Universal Sealer, the Lockin' Pocket Inter-Locking Flashing System becomes a long lasting, waterproof, solid mass that can make the most challenging penetrations watertight in minutes.

The Lockin' Pocket system includes:

- Interlocking Corners
- Interlocking straights 150mm, 200mm, 250mm, 300mm
- Fully moulded square pockets 150mm, 200mm
- LPS Sealant
- Hurricane Force Universal Sealer

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Nurapatch

A highly polymer modified, high specification cement render that features strong adhesion and tensile strength development combined with a rapid yet practical through-cure in thicker render sections, with outstanding cured strength, resilience, and low shrinkage. For patching concrete prior to membrane installation.

Accessories Supplied by Others

NPM900 Metal Tray (Supplied by Dimond Roofing)

A metal tray deck substrate with wide ridges to support the Nuratherm sheets.

Gorilla MS Sealant (Supplied by Soudal, formerly known as Fixall 220MS by Holdfast)

High performance MS sealant

Gorilla Fire Rated Expanding Foam (Supplied by Soudal formerly known as Holdfast)

A one-component, self-expanding, ready to use polyurethane foam. Seals against smoke and gas. Insulates, adheres & waterproofs

SITE STORAGE

- a. Store rolls on selvage end of roll and off the ground.
- b. Protect all products and equipment from sun, heat and frost.

Examples of correct on-site storage



NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Example of incorrect on-site storage



Tools in General

String line, gas torch (small 20mm for detailing & 50mm for large areas), 2 x fire extinguishers suitable for Class A, B, and C fires, moisture meter to measure moisture content of substrates, water spray bottle, spirit level, 2 x craft knife (straight & hooked blade), tape measure, straight edge, cutting board, margin trowel, tool belt & or tray, seam/printers roller, paint brush & roller, knee pads and gas lighter (BBQ)



NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

5. Substrate Readiness

Nuralite maintain comprehensive check sheets for substrate readiness, safe 2 torch, project sign off, and maintenance. We have bundled these check sheets into a single concise file which can be [obtained by clicking here](#) or from www.nuralite.co.nz

Many poor jobs are found to result from membranes being laid on top of a badly constructed substrate.

Before commencing laying any Nuralite systems, the installer must be sure that the substrate is ready by receiving a completed Substrate Readiness Checklist from the main contractor (builder). The installer should contact Nuralite in case of any concerns.

Be sure to store the completed forms and supply them to Nuralite when the Materials Defects Warranty is applied for.

If a project has two or more substrate types, separate checklists must be completed for each substrate and any interface between the substrates is a matter of specific design for each building.

1. SUBSTRATE – NEW TIMBER

- a. The top surface of the plywood should be sanded and plugged to a minimum standard of C.
- b. Plywood substrate must be 17mm thick for roofs, 21mm thick for decks, and must be treated H3.2 grade. Do not use LOSP-treated (light organic solvent preservative) or CuN treated (copper nitrate) timber. Multiple layers of thinner ply may be used to make up the minimum thickness.
- c. Refined timbers, refer to manufacturer's technical literature for correct use and application. Must be treated but must not be treated with LOSP (light organic solvent preservative) nor CuN (copper nitrate).
- d. All other timber products i.e., trim, battens and framing must be treated but must not be treated with LOSP (light organic solvent preservative) nor CuN (copper nitrate).
- e. Roofs and decks must be supported at 600mm centre maximum (including noggins & rafters), timber sheets must be laid across supports and joints staggered (brick pattern), unless otherwise specified.
- f. Timber and support timber dry, surface clean.
- g. Minimum Finished Constructed Falls
 - 1:80/0.73° for roofs or decks (Note 1)
 - 1:100/0.6° for gutters
- h. Sheets must be glued and then fixed with Grade 316 Stainless Steel 10-gauge countersunk screws.

Screw edges every 150mm}	about 20mm from the edges
Screw centres every 200mm}	throughout the timber sheet
- i. Joints butted, upstands filleted, edges arrised.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

- j. Drainage outflow details rebated.

CLT and Strandboard substrates are also supported. Strandboard must be laid as per plywood, but with rafters and nogs at 400mm centres.

Important: Strandboard is not for use in balcony decks

2. SUBSTRATE – NEW CONCRETE (TRUE IN PLANE, WOOD FLOAT SURFACE)

- a. Minimum Finished Constructed Falls
1:80/0.73° for roofs or decks (Note 1)
1:100/0.6° for gutters
- b. Concrete substrate contains less than 5% moisture content (measured with a calibrated concrete moisture meter) and curing membranes removed.
- c. Upstands filleted, edges arrised, drainage outflows rebated.
- d. Surface clean and dry.

3. SUBSTRATE – NEW NPM900 METAL TRAY SURFACE

This is the quickest and most cost-effective substrate to install.

- a. Minimum Finished Constructed Falls
1:80/0.73° for roofs or decks (Note 1)
1:100/0.6° for gutters
- b. Supporting rafters spaced as per specification (varies depending on NPM900 gauge).
- c. Nuratherm sheets stagger lay (fully offset) with correct falls and no ponding.

4. EXISITING SUBSTRATE

When used on existing projects, it is the responsibility of the property owner to have the structure and substrate assessed by a qualified expert and approved by Nuralite Waterproofing Ltd. For this CodeMark to be applicable the substrate material is limited to only those approved within this manual. Attention must be paid to the substrate surface to ensure it has not deteriorated to the point of being unsuitable.

- a. Minimum Finished Constructed Falls
1:80/0.7° for roofs or decks (Note 1)
1:100/0.6° for gutters

Note 1: Roofs must have a minimum finished (constructed) fall of 1:80. This is the fall that is achieved on the roof at the completion of construction. Designers should make allowance for construction tolerances and deflection to ensure the falls are achieved onsite.

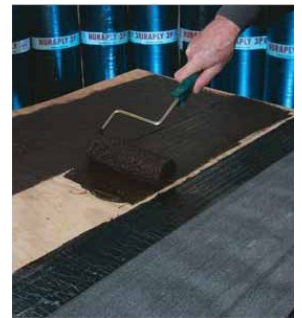
NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

6. Installing the Nuraply 3PM system


a. Installing the Nuratherm system

Vapour Barrier

- i. The amount of condensation depends on the temperature in-balance and the humidity of the internal air. Vapour barriers prevent moist air from reaching the dew point and so prevent condensation forming
- ii. Before laying the membrane, prime the substrate with Nuraflux QD primer.
- iii. When installing the membrane, ensure the Nuraply ALU vapour barrier covers the entire area and wraps up the insulation side so there is no opportunity for vapour to enter the roof system from below.
- iv. Seal all penetrations carefully and repair any damage to the membrane.
- v. Because no condensation will form within the ceiling cavity there is no need to vent the ceiling when installing a Nuratherm warm roof.



Nuratherm Boards

- i. **IMPORTANT**
Keep the materials and system dry onsite.
It is critical to ensure that the insulation and system build-up does not encounter water.
- ii.  Lay the sheets in a brick bond fashion to prevent movement. The sheets can be cut with a knife or saw.
- iii. It is vital that no thermal breaks exist in the system so fill any gaps with Gorilla Fire Rated Expanding Foam.

Using Multiple Layers of Nuratherm PIR



Using more than one layer of Nuratherm PIR boards is acceptable and is often necessary if a high R value is desired, or if tapered PIR boards are used.

Additional PIR layers must be offset from the previous layers so that board joins alignment between layers is kept to a minimum. All PIR layers must be in a brick-bond pattern.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Fixing Nuratherm PIR on Timber, Concrete, or Metal Tray deck

IKOfix fasteners are designed to penetrate the insulation and has the following advantages:

- Reduces thermal bridging
- Cost effective because shorter screws are required.
- No risk of the screw penetrating the membrane if someone stands on the fixing.

IKOfix fasteners must be used in most situations.

Fixing Flat Nuratherm PIR boards

Flat Nuratherm PIR boards are 1.2m x 2.27m in width x length but can also be 1.2m x 2.4m

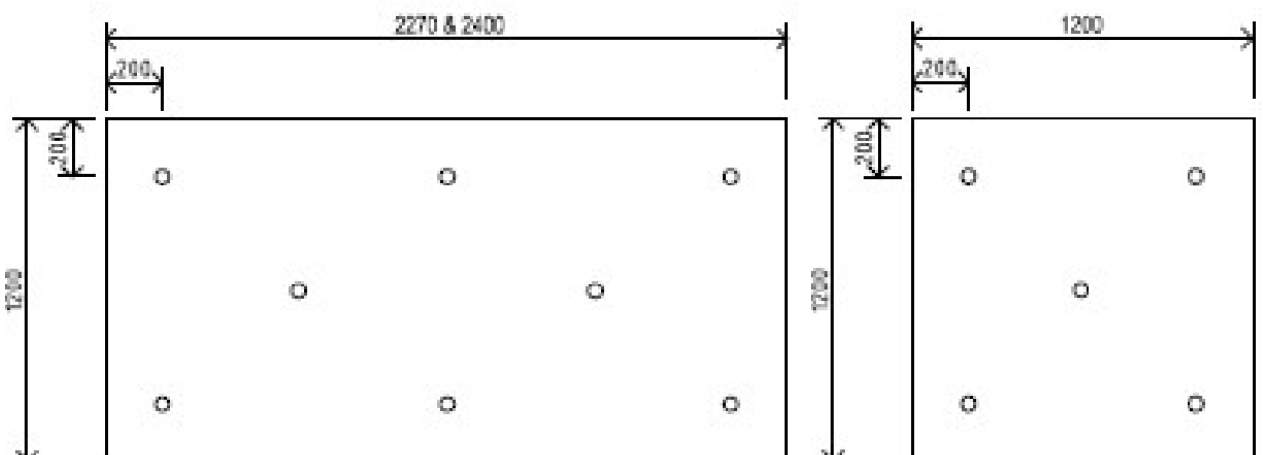
Secure the sheets with 8 fixing per sheet for wind zones up to and including Extra High. The fixings should be inset by 200mm in each corner with at least two in the centre. For wind pressures above 3.33 kPa consult with Nuralite who can commission a site-specific fixing plan.

Fixing Tapered Nuratherm PIR boards

Tapered Nuratherm PIR boards are 1.2m x 1.2m in width x length, they come with a 1° fall built in and come in various thicknesses starting with 40mm.

Secure the sheets with 5 fixing per sheet for wind zones up to and including Extra High. The fixings should be inset by 200mm in each corner with at least one in the centre. For wind pressures above 3.33 kPa consult with Nuralite who can commission a site-specific fixing plan.


If you notice the boards move when walking on them, use additional fixings to ensure the boards are stable and flat.



NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL




Adhering Nuratherm PIR on Timber, Concrete, or Metal Tray deck

In certain circumstances, the PIR build-up can be adhered with PU adhesives, however, Nuralite must be consulted prior to this occurring.

- i. The Nurabond High Foaming PU Adhesive is cold applied and has been specially developed to allow the safe, rapid partial bonding of roofing components.
- ii. It is moisture curing and tolerant of use in damp conditions. A degree of moisture is required, either in the atmosphere or on the surface, to allow the correct adhesive bond to be achieved. However, all liquid water should be removed from surfaces prior to use.
- iii. Curing time is dependent upon ambient temperature and humidity conditions however, curing will usually occur between 2 to 6 hours. The adhesive will take 24 hours to achieve full bond strength.
- iv. The minimum working temperature is 5°C. At low temperatures, warming the containers in hot water prior to use will improve handling characteristics. (N.B do not boil the product). Maximum working temperature 30°C.
-  v. Surfaces to receive adhesive should be stable, clean and free of any liquid water (damp surfaces are acceptable). **PIR boards should not be primed.**
- vi. Nurabond High Foaming PU Adhesive is applied straight from the container in strips. The maximum distance between the strips is 25cm. Use the spout on can for pouring lines of adhesive.
- vii. Weight the Nuratherm boards once they are laid into the adhesive to ensure a good bond between the two surfaces.

b. Installing the Nuraply base layer

Layout

-  i. All surfaces must be checked to ensure they are dry, clean, smooth and free from sharp edges, loose or foreign materials, oil grease or other deleterious material that may affect the adhesion of the membrane or may damage the membrane.
- ii. Plan rolls layout for best drainage. Lay membrane from drainage outlets and gutters, low points, and edges, up the roof /deck slopes. Nuraply is usually installed running down the slope to minimize water retention on the roof.
-  iii. Be sure to run membrane down the length of the gutter – not across it. There should be no laps within 1m of the outlet.
- iv. Use chalk lines to insure straight neat lines of the finished membrane.
-  v. Double thickness application is required at all internal and external corners, at upstands and turndowns. This will eliminate:
 - (a) The possibility of weakening the Nuraply membrane when tooling to angles,
 - (b) The double thickness increases the strength to withstand substrate movement and mechanical damage at these points.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Adhesion of Nuraply 3PB, Nuraply 3PB-SA or Nuraply 3PV Sheet to Substrate

- i. Unroll and relax the sheet.
- ii. Apply the Nuraflux primer evenly over the area to be waterproofed.
- iii. Install detailing (refer to g.) to all drainage outlets gutters before laying the main roof. Ensure outlets are rebated to avoid build-up at outlets and to allow drainage outflow.
- iv. Whilst unrolling the membrane roll use a correct size gas torch to heat the membrane until a bitumen bleed is established (Not required for Nuraply Self-Adhesive membranes). Overlap previous rolls sides 80mm and ends 100mm ensuring all laps face downhill.
- v. Weld all lap joints carefully using Nuraply welding techniques and testing all joints progressively.
- vi. Welding and detailing with skill, creates perfectly fused laps, with minimal exposed smooth bitumen, and neatly angle tooled joint edges. Stagger the roll lying to avoid four corners meeting in one place.



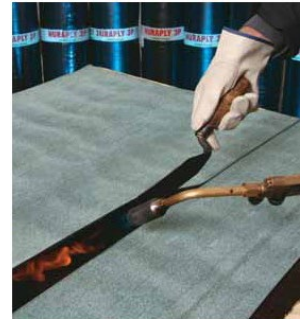
Adhesion of Nuraply 3PV-SA Sheet to Nuratherm Substrate

- i. Unroll and relax the sheet.
- ii. Install detailing (refer to g.) to all drainage outlets gutters before laying the main roof. Ensure outlets are rebated to avoid build-up at outlets and to allow drainage outflow.
- iii. Whilst unrolling the membrane roll, peel away the film to reveal the self-adhesive surface. Overlap previous rolls sides 80mm and ends 100mm ensuring all laps face downhill.
- iv. Weld all lap joints carefully using Nuraply welding techniques and testing all joints progressively.
- v. Welding and detailing with skill, creates perfectly fused laps, with minimal exposed smooth bitumen, and neatly angle tooled joint edges. Stagger the roll lying to avoid four corners meeting in one place.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Making the Lap-Joint

- i. To weld lap-joints use the round edged finishing trowel and heat gently. Insert trowel between sheets and lift the edge of the top sheet high enough to allow the torch flame to liquefy both surfaces.
- ii. Both hands must work together, moving back and forth along the sheet approximately 350mm. When the surfaces are melted, remove trowel and torch flame from the lap joint.
- iii. Position hot trowel blade firmly on top of joint approximately 50mm back from the open edge and weld the sheets together with pressure from the hot trowel.
- iv. Re-lift the edge of the upper sheet, heat under it and trowel weld the middle 25mm of the lap with pressure from the trowel. Once again, re-lift the edges of the upper sheet, reheat, and with pressure from the trowel, weld the remainder of the lap to within 5mm of the front edge. Lift the front edge, reduce heat, and then apply flame between the sheet edges.
- v. Seal the front with pressure from the trowel, ensuring this time that the trowel follows closely behind the flame. The edge of the trowel is then run along the front edge of the top sheet at about 45° to ensure a good seal.
- vi. Finally, dress the front edge. Each section of jointing (approximately 350mm length) should be completely welded before starting the next section.
- vii. Always keep the trowel hot and scraped free of carbon build-up, to prevent Nuraply membrane surface from dragging. A properly made lap joint should not be capable of being pulled apart at normal temperatures.
- viii. Random test finished and cooled joints with the hot trowel edges, as work progresses.



REMEMBER: A SOUNDLY WELDED LAP-JOINT IS CRITICAL FOR THE SYSTEM TO REMAIN COMPLETELY WATERPROOF.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

c. Installing Cap Sheet



- i. Before proceeding, ensure the first layer has been completed, is fully bonded to the substrate and that the welded joints are sound.
- ii. If practical, flood test gutters and outlets.
- iii. If there has been an extended period between installing the base layer and the cap sheet, then ensure the base layer is clean and dry. It may be advisable to prime the base layer with Nuraflux QD primer.
- iv. The laps of the cap sheet must be offset to the laps of the base sheet. Similarly with three or more layered systems.
- v. Unroll and relax the sheet.
- vi. Weld the upper cap sheets so that they are fully bonded to the immediate under layer by applying heat to the top of the base sheet and underside of the cap sheet as you unroll the cap sheet.
- vii. After each two or three rolls are laid. Weld all lap joints perfectly using Nuraply welding techniques, discussed in "5.g Making the Lap-joint", testing all joints progressively.



NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Installing Metal Nuravents (not required on Nuratherm Warm Roof systems)

The method for creating cross flow ventilation is a design consideration and so must be specified by the designer.

If using a cold roof system, ventilation of timber roof spaces, particularly skillion roofs, is recommended by Nuralite to assist with removal of interstitial moisture and mitigate elevated temperatures in the ceiling cavity. A practical and unobtrusive way is using soffit vents or parapet venting.

If a Nuravent is specified, install at high and low points to promote air flow in roof cavity, which should have interconnecting ventilating passages.

- i. Lay the Nuraply roof first. Consequently, Nuravents can be installed on new or existing roofs.
- ii. Locate Nuravent positions. Cut holes through the substrate to ventilate roof spaces.
- iii. Screw down the vent base onto the substrate using at least 4 screws per vent. The vent base can sit directly on top of the installed Nuraply.
- iv. Weld the baseplate over-flashing tight to baseplate edge and surrounding Nuraply. Ensure the flashing extends at least 75mm from the edge of the Nuravent baseplate
- v. Flash up the vent pipe with Nuraply.
- vi. Repeat steps iv and v so it is encased with two layers of membrane.
- vii. Fasten on the Nuravent cap using the three screws and washers provided.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

Flood Testing Gutters

Where possible, flood test all gutters with a minimum 50mm depth of water at the outlet (clamp ring drain or scupper) for 24 hours. Make good any lack of water tightness when the surface is completely dry. Not all applications can be flood-test checked. Electronic Leak detection is also an option as stated on most council PS3 forms. Either way all gutters are required to be checked.

It is important to note that sometimes overflow clamp ring Drains or Scuppers are above the level of the deck / roof surface, therefore, to test those you would require to flood onto the deck / roof area. This can lead to issues of weight loading especially on timber construction and excess hydrostatic pressures created. It is important to note that membrane decks / roofs are water shedding devices and not water holding devices. If the deck / roof requires testing it is better practice to apply a continuous water flow for at least 24 hours across the roof.

We only require that the gutter and outlets are tested and that the gutter is filled with water so it does not encroach on the roof / deck, so the maximum fill will depend on the height of the gutter wall at the shallowest point.

If a balcony deck has the outlet centrally located, the water flood test is not to exceed the height of the lowest point of the overflow outlet. Allow the water to just start to enter the overflow and stop the addition of any further water.

It is critical that weather conditions are suitable for testing, with no rain expected during the test time frame, unless the building is shrink-wrapped or similar preventing further rainwater entering the test areas.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

7. Trouble Shooting Problems and Repairs

If bubbles occur in Nuraply 3PM – either

- a) Moisture has become vapour underneath the Nuraply 3PM, or
- b) Air is underneath the Nuraply 3PM, or
- c) Too much heat has been used in welding

With a) and b) the bubbles will be formed by the Nuraply 3PM lifting off the deck.

With c) the smaller “blisters” form only in the top layer of Nuraply 3PM.

- i. Check ventilation of timber/timber decks.
- ii. Check for water entry somewhere.

a. When the moisture which causes the vapour-created bubbles has gone, or dried out, or stopped, the bubbles can be warmed and blocked down to remove the problem. It may also be necessary to cut open and torch down and overlay neatly with Nuraply 3PM to reseal bad areas.

b. Air trapped during laying can be removed by rolling or warming and blocking down. If this does not work, the bubbles can be cut and warmed and blocked down. After this an overlay piece will be required, welded onto the surface after priming with Nuraflux.

c. Blisters from welding can be warmed carefully and blocked down before recoating the surface.

d. Install Nuravents as required to ventilate roof space.

Repairs to the Nuraply 3PM system are performed by welding pieces of Nuraply 3PM to the cleaned and Nuraflux primed damaged surfaces:

a. Minimum repair of one small hole is a lap-to-lap infill strip of Nuraply 3PM 100mm wide to look like a lap joint.

b. Larger/wider spread damage requires lap to lap infill pieces of Nuraply 3PM long enough to cover all damage plus 100 mm minimum each side of the damage.

c. Ensure that the repaired Nuraply 3PM roof appearance remains neat and attractive.

NURAPLY 3PM ROOFING MEMBRANE INSTALLATION MANUAL

8. Technical Datasheets

The links below will take you to the relevant technical datasheets.

[Nuraply 3PB](#)

[Nuraply 3PBSA](#)

[Nuraply 3PV](#)

[Nuraply 3PV-SA](#)

[Nuraply 3PM](#)

[Nuraflux No. 10 Primer](#)

[Nuraflux QD Primer](#)

[Nuraflux WB Primer](#)

[Nuraply ALU Vapour Barrier](#)

[Nuratherm PIR](#)

[Nuralite PU Adhesive](#)

[Nuralite LPS Sealant](#)

[Nuralite Lockin' pocket](#)

[Nuralite Fixing Plate](#)

[Nuraglaze](#)

[Nuradeck Acrylic](#)

[Nuradeck C](#)

[Nuraboard](#)

[MS Detail](#)

[Nuraflush](#)

[Nurapatch](#)

All these datasheets are available from www.nuralite.co.nz

9. Installation details

The links below will take you to the relevant installation detail downloads:

[Nuraply 3PM Warm Roof Details](#)

[Nuraply 3PM Cold Roof Details](#)

All these details are available from www.nuralite.co.nz/spec-flow