



Oakridge Resort Wanaka

GREEN ROOF SYSTEM Technical Brochure

Key features and benefits

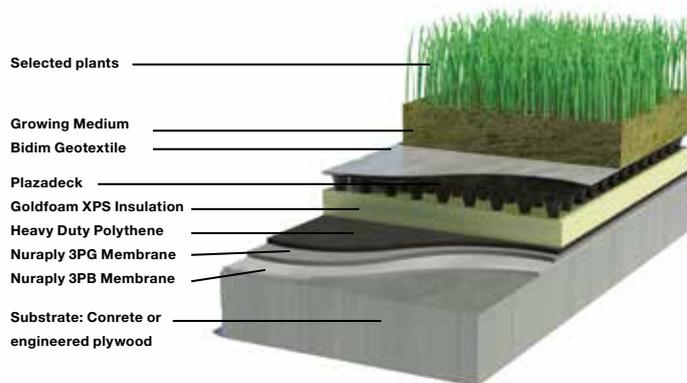
A Green Roof system looks great while being good for the environment.

If you want to create a building that sits comfortably within the landscape, or you want to bring nature into areas where normally concrete and asphalt prevail, a Green Roof system provides the solution.

Green roof systems are equally applicable on office towers, discrete rural properties, hospitals or for podium areas above carparks.

Hard construction materials discharge water very quickly, reducing effective evaporation and loading the drainage systems. Green roofs retain a very high percentage of rainwater and provide slow, controlled water run-off.

Green roofs can improve the acoustics and thermal properties of the building while also providing additional natural environment space for recreational and leisure purposes. Green roofs can significantly increase the life of the waterproofing membrane, protecting it from UV degradation, physical damage and the extremes of climatic conditions.





Beach Retreat, Northland



Auckland Botanical Gardens

The Complete Green Roof System Construction

A successful green roof requires that the plants thrive while the building stays dry. We have worked closely with industry partners to develop a system that achieves this outcome. From the bottom up, the layers in the system are:

The Building Substrate

Normally this is constructed in concrete, though it could be built using plywood instead.

The structure must be designed to accommodate dead loads in excess of normal buildings as often a green roof weighs in excess of 100 kgs per square meter.

The Waterproofing Membrane

Once installed the waterproofing membrane is virtually inaccessible. Nuralite therefore recommends that clients install a Nuraply 3P two layer system because it is robust, durable and very watertight as it is constructed from two independent waterproofing layers.

The cap sheet in a green roof system is Nuraply 3PG. This membrane is impregnated with an anti-root additive to stop plant roots from damaging the system.

Heavy duty polyethene

This layer is designed to protect the membrane from damage as workers install the green roof. The sheets are taped together to provide an additional root barrier layer.

Insulation – XPS

If the building is to be insulated the best way to do it is with XPS insulation laid outside the building structure. Insulation placed here does away with the need to vent the ceiling cavity or to install vapour barriers. Since gardeners later may not respect the waterproofing system below, the insulation has the added benefit of providing the waterproofing membrane with some protection from spades.

Drainage Layer – Plazadeck with Bidim Geotextile

Water is important to ensure the plants thrive – but it must be discharged well when too much rain falls. The Plazadeck assists with this as it stores water in its cups for irrigation later, but once the cups are full the water drains through holes and is quickly discharged. The Bidim Geotextile is laid above the Plazadeck to prevent the soil from clogging up the system.

Growing Medium and Plants

A green roof is an artificial environment. Consequently it is important that the correct growing medium is used to ensure a healthy plant population. In addition, plants must be selected which will thrive in the specific environment that has been created. We recommend clients consult experienced experts to ensure the best plants and medium are chosen for the system.



Melting bitumen to adhesive



3PG heat welded to basesheet



Drainage mat laid on membrane

Warranty

Nuralite warrants Nuraply 3PG against materials defects for 20 years from the date of installation. The warranty must be applied for at the completion of the job. The workmanship is covered by a separate workmanship warranty issued by the Nuralite approved applicator.

Things to consider

The substrate provides the foundation for a successful system. Because of the weight of a Green Roof system, specific engineering design is important.

Drainage must be carefully considered to ensure the system does not flood. Our Green Roof system has been designed to ensure that drainage is kept clear and effective. Details need to be carefully designed to ensure the drainage system works effectively.

Always allow a 300mm wide barrier of stones or pavers around the edge of the green roof, and adjacent to penetrations like drains.

If the building is insulated under the roof substrate, ventilation is very important to remove condensation buildup within ceiling spaces. A Nuravent every 20m² of roof surface is recommended but attention must be paid to placement to allow for cross flow air movement.

The growing medium and plants must be carefully chosen to ensure the system flourishes. Consult experts in the field for advice on this area.

Building Code Compliance

Because of their nature, Green Roofs require special documentation when applying for building consent. Our advisors are happy to assist with any planning questions prior to submission to consent authorities.

Green roofs can address concerns of neighbours where resource consent objections are raised.

Applicators

All of our authorized applicators have been trained at our premise followed by on-site training. Most applicators have been working with our systems for many years.

We work closely with applicators to ensure quality standards are maintained.

Our applicators install the waterproofing system and drainage layer. The landscape aspects should be performed by skilled professionals.

Technical information

A comprehensive set of design details and specifications are available at www.nuralite.co.nz

Our Technical advisors are all very experienced and willing to help either on the phone, in your office or on site. Call **09 579 2046** or **0800 Nuralite (0800 687254)**.

Waterproofing systems

NURAPLY 3PG DESCRIPTION

For Green Roofs a two layer system is required. The preferred base sheet is Nuraply 3PB, because it is fully bonded to the substrate.

The cap sheet is Nuraply 3PG. This membrane is specifically designed for Green Roofs as it is impregnated with a herbicide to discourage roots from attacking the Nuraply 3PG sheet. It also has a smooth surface to ensure waterflow is unimpeded by sediment or aggregate chips.

COMPOSITION NURAPLY 3PG

- ▶ Polyester composite reinforcement 180 g/m²
- ▶ Coating mass: plastomer bitumen, consisting of ± 70 % bitumen and ± 30 % atactic polypropylene (APP) with addition of a root rejecting element.

TECHNICAL SPECIFICATIONS (AVERAGE VALUES)

- | | |
|--|----------------------------|
| ▶ Tensile strength (U.E.A.t.c.) | L: 900 N
T: 650 N |
| ▶ Elongation at break (U.E.A.t.c.) | L: 45%
D: 45% |
| ▶ Resistance to heat (U.E.A.t.c.) | $\geq 140^{\circ}\text{C}$ |
| ▶ Low temperature flexibility (U.E.A.t.c.) | - 8°C |
| ▶ Dimensional stability | 0.2% |
| ▶ Root Resistance according to DIN 4062 | |

DIMENSIONS

- ▶ Thickness: 4 mm
- ▶ Length: 10 m
- ▶ Width: 1 m
- ▶ Average weight: 40 kg

To the best of our knowledge, the information in this brochure is accurate at the time of printing. Nuralite Waterproofing Ltd reserves the right to alter information, formulation or parameters at any time without notice.