HORTICULTURE

- Nikoflex™
- Vercan Root Barrier
- Garden Trellis
- Groshield
- Birdnetting

Nikoflex - Green House Film

is a thermic horticultual plastic made to last many seasons. Available in two grades .2mm and .15mm. Nikoflex is triple layer co-extruded, has optimal light transmission & diffusion, thermic, anti-fogging, anti-static, anti-drip.

Nikoflex is a 3 layer co-extruded film with each layer performing a unique and specific function. By the skillful blending of polymers only the smallest amount of chemical additive is needed. Nikoflex film retains its superior properties over a longer period of time.

Vercan Root Barrier

Every year roots cause milions of dollars of damage to roadways, pavements and buildings. Now you can prevent this damage by installing Vercan Root Barrier, a totally new way to control roots. When it comes to installation, it is light, flexible and can be formed to fit anywhere you need it to go. It installs completely underground with a narrow-width excavator, so your root barrier is out of sight and the roots are out of mind.

Garden Trellis

Permathene's all purpose garden trellis is a UV stabilised polyethelene available in two mesh sizes 16mm or 50mm.
Garden trellis is usually used as a support for flowers and climbing plants. However, it has been used in a variety of applications including:

- Privacy screens abound carports
- Fencing off small areas
- Safety barrier around balconies

Groshield™

fabric is a white, non toxic, lightweight fabric with excellent ventilation properties. It is formulated especially for horticultural uses from spunbonded 20g/m2 polyester fabric. The special formulation and fibre distribution combine to offer exceptional strength and durability.

Groshield™ protects from:

- Wind
- Frost and Snow
- Dehydration
- Insects and Birds
- Rain and Hail

Knitted Birdneting

is made in two types, knitted and extruded. Knitted is a long life product with hole sizes which do not restrict bee movement, is run proof and will not tear. Knitted Birdnet is manufactured in two distinct styles, a hexagonal mesh pattern for permanent canopy installation and a diamond mesh pattern suitable for temporary drape over applications. Both are made from strong UV stabilized HDPE yarns.

- Canopy
- Drape Over
- Extruded Birdnetting
- Reinforced

PERMATHENE
Earth Solutions

Solarshade

Premium Knitted Monofilament Shadecloth called Solarshade Premium, is a tough and durable multipurpose sun, wind, heat, hail and rain screening fabric which protects plants, people, property, and animals from the extremes of weather. It is the undisputed world brand leader being sold and distributed in more than twenty countries.

Supershade Plus

is a commerical premium grade shadecloth that provides excellent UV protection. A strong, durable and long lasting fabric, Supashade Plus provides up to 95% cover factor and can be used in many applications:

- BBQ and pergola areas
- Playgrounds
- Swimming pools
- Nurseries

Domestic 90 Shadecloth

Knitted shadecloth for use in: pergolas, privacy screens, BBQ areas.

Ground Staples

Ground Staples are designed as a fastening method for all ground covering fabrics. The staples are manufactured from tough galvanized steel. They pin the fabric into the ground stopping the wind from lifting the fabric.

Ground Gripper Pegs

Ground Gripper pegs are heavy duty, durable, and UV stabilised for long life. This amazing product pins NoWeed™ and other landscaping fabrics to the soil with unprecedented tenacity. A wide head, decorated with a Permathene logo, makes insertion a breeze, while ensuring optimum contact with the cloth. The skillfully designed fins provide significantly increased surface area for greater cohesive stability.

Knitted Windbreak Fabrics

- *Ulstrawind:* A black fabric, identified with a green edge.

Manufactured from the highest quality monofilament HDPE. 140g/m2 in weight. We provide a 10 year warranty against product failure due to ultra violet degradation. Ulstrawind has rip stop stitch eyelets, a shade factor of 48%, porosity of 52% and it's burst strength is 1600kpa average. Ideal for commercial or domestic use.

- *Windbreak Plus:* Manufactured from the highest HDPE monofilament. Warp is black and Weft is green. Weight of 114g/m2. We provide a 10 year UV warranty against UV degradation. Has rip stop stitch eyelets added. Same knit as ulstrawind, lightweight premium monofilament. Ideal for domestic use.

Permaclip Fasteners: For securing windbreak to posts.

Permaclip™

is a fastening method for all shadecloth and windbreak fabrics. It is manufactured in tough UV resistant materials to withstand extremes of climate and provide a long life. Permaclip™ fasteners are reusable.

Permathene Ltd, 404 Rosebank Road, Avondale, Auckland, Tel (09) 968 8888, Fax (09) 968 8890, www.permathene.com

Nikoflex

multi-layer greenhouse film

Ultra longlife, high clarity horticultural film with up to 57 month UV Warranty

- Triple Layer Co-extruded
- Optimal Light Transmission & Diffusion
- Thermic
- Anti-Fogging, Anti-Static

Description. Three Layer Co-extrusion. Nikoflex is a 3 layer co-extruded film with each layer performing a unique and specific function. By the skillful blending of polymers only the smallest amount of chemical additive is needed. Nikoflex film retains its superior properties over a longer period of time.

Light Transmission & Diffusion. High light transmission is essential for photosynthesis and plant growth. However, light diffusion also increases photosynthetic efficiency. Nikoflex film provides both a global light transmission (PAR) of 91% and a light diffusion of 23%. The film actually reduces shadows, helps prevent burning, and ensures better distribution of light even to the lower parts of the plant.

Thermic Properties. With an IR absorption of over 80% and a high EVA content, Nikoflex film prevents major heat loss while relying less on chemicals and more on natural non-volatile polymers. Savings of 30% may be achieved.

Anti Static. The special anti static outer layer repels dust, dirt and industrial pollutants. This ensures optimal light transmission.

Anti-fogging effect. Special anti-condensate additives lower the surface tension between film and water. This results in a continuous thin layer of water running down the greenhouse sides and prevents the formation of water droplets.

State of the Art Technology. Nikoflex film is made by the worlds first manufacturer of 3 layer co-extruded greenhouse film. The latest computer controlled production lines allow for widths of up to 17m with unparalleled material tolerances. Other films can vary by over 20% causing problems such as locking strip slippage, tearing, early breakdown, etc.

Quality Assurance. Nikoflex greenhouse film is manufactured to ISO 9000 with in-house production of master batches (including all IR and UV additives) and quality verification testing of every batch prior to delivery. Total control from start to finish allows for consistent quality time after time.

Warranty. Nikoflex film contains 15-30% more UV stabiliser and can be expected to last in excess of 5 years under normal growing conditions. Permathene warrants .2mm for 57 months starting from 1st March (5 winters + 4 summers) and .15mm for 36 months against failure due to UV breakdown. All warranties are backed in writing by Permathene Ltd., leader and innovator in polyethylene technology since 1959.

Sizes. 0.15mm and 0.2mm are both available in standard rolls of 50m or cut to required length.

Standard Widths: 2m, 3m, 4m, 6m, 8m, 10m, 12m
Other widths up to 17m available upon request.

Physical Properties	Unit	150	200
Thickness	mm	0.15	0.20
Tensile Strength at Yield	N/mm²	25.4	25.6
Elongation at Yield	%	465	521
Impact Resistance	g	210	230
Tear Resistance	gf/micron	4.83	6.44
Infra Red Transmission	%	19.2	17.5
Global Light Transmission	%	91	91
Diffused Light Transmission	%	23	22
UV-A Transmission	%	17	17

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WEED CONTROL FABRIC

· Noweed Premium · Noweed Standard

SYNTEX® by Permathene

Description

• Noweed Premium

Weed control fabric is a UV stabilised heavy duty (109 gsm) woven polypropylene fabric with green vertical marker lines at 30 cm centres.

highway embankment with planting in progress

Manufactured as a fibralated woven material designed to prevent weed growth and yet allow air to circulate! Soil is not soured and roots are protected from the spread of fungus and bacteria.

Why Noweed Premium stands out from other fabrics which appear to be the same, is its construction. An ordinary woven polypropylene pools water and prevents air flow, resulting in poor soil and poor growth. Noweed Premium breathes!

• Noweed Standard

An economical brand of weed mat most commonly seen in retail applications. It is well UV stabilised and does an excellent job of preventing weed growth. For situations where soil is receiving plenty of water, then this product will do the job at a lower cost. As a standard woven type product it lacks the same high performance of the Premium grade.

Applications

Noweed weed control fabric is commonly used for landscaping applications to prevent erosion along highways, commercial growers, pebble and bark gardens, and weed control without the hazards of chemical sprays which endanger the growth and health of other plants. The fabric can be used both in ground or as an overlay for container growing.

Typical Properties

Noweed Premium			Noweed Standard
Tensile Strength (Grab)	ASTM D4632	715 x 510 N	538 x 431 N
Elongation	ASTM D4632	20 %	19 %
Mullen Burst	ASTM D3786	2135 kPa	
Trapazoidal Tear	ASTM D4533	330 x 265 N	
Puncture Resistance	ASTM D4833	310 N	178 N
AOS (Std Sieve)	ASTM D4751	.425 mm	
Mass per Unit Area	ASTM D5261	109 gsm	
Permeability	ASTM D4491	.005 cm/sec	
Flow Rate	ASTM D4491	7 liters/m2/sec	2 liters/m2/sec
UV Resistance	ASTM D4355	70%	

PERMATHENE Earth Solutions

Updated September 2009

Permaliner for Tanks
Information and Installation Guide

Permathene Tank Liners are designed to be placed inside existing tanks as follows: wooden tanks designed for liners, concrete and galvanised steel tanks which are prone to leaking and elimination of contamination from structural elements.

Permaliner tank liners are made for water and chemicals, see chemical resistance tables for compatability.

Permaliner is 100% toxic free and suitable for potable water containment (FDA approval 177.1210).

We custom manufacture liners for any size rectangular or circular tank.

- Before ordering a tank liner from us please obtain the following: Rectangular tanks: internal Height, Width, Length. Circular tanks: internal Height, Diameter.

Tankliner Installation

Preparation
Ensure structure surface is clean, dry and free from rust and scale. Metal surfaces should be coated with suitable rustproofing paint and allowed to dry thoroughly. Ask about our Syntex nonwoven geotextile to protect the base from any sharp objects.

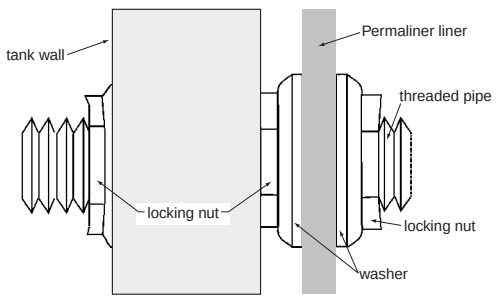
- **Caution**

Do not allow liner to be trampled, dragged, etc.
Avoid unnecessary handling and wrinkling
Do not wear shoes while walking on liner

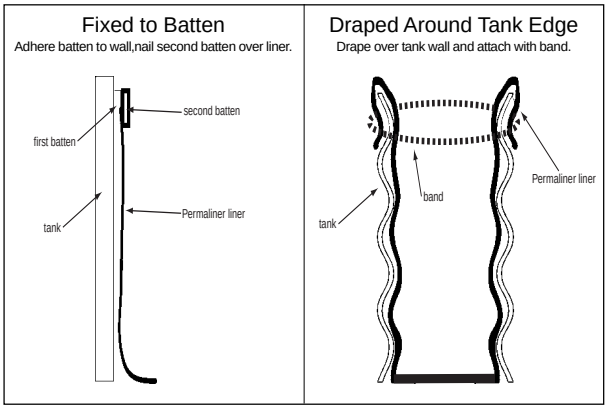
Liner Placement
Open the liner to its full size and evenly apportion liner in the tank, being careful to avoid snags.

Outlets and Overflows
When liner is in correct position determine exact location of the outlet and overflow and cut a slit the size of pipe being used in exact orifice location.

Insert a threaded pipe nipple with at least 1½" (38mm) of thread for a ½" (12mm) pipe or greater for larger diameter pipes. Put rubber washer and locking nut over threaded nipple on both sides of lining material.
Insert threaded pipe into tank orifice and secure to tank structure by means of another locking nut. **Do not allow pipe or washers to turn when tightening nuts** as this can damage liner.



Completion
When the outlet, overflow, and liner are installed, partly fill to check the connections are watertight. Any leaks will require correction before filling continues. Carefully replace tank lid. Left undisturbed, the liner should require no further attention.



Liner Attachment
Evenly apportion excess material and attach liner to tank wall around the top edge by one of the methods shown below. Spread liner to all bottom edges. Do not allow any voids, as the liner must be fully supported by the tank structure. Any air pockets behind the liner can cause the material to stretch beyond its limits, resulting in damage.

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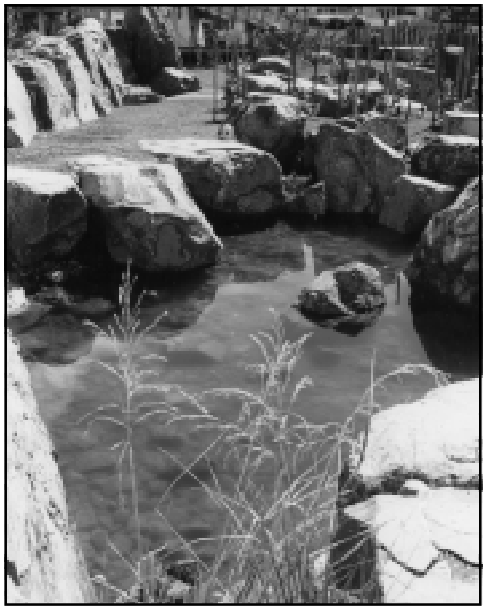
Permaliner ™
Designed for Ornamental Ponds



The installation of an ornamental pond is a simple process that will greatly enhance your garden setting, allowing you to cultivate water plants and fish, and provide you with an attractive and cost effective method of adding value to your property.

Permaliner FPA membrane is specifically designed for water storage use, and is an ideal and practical product choice for the home garden enthusiast.

The following details outline a list of suggestions that should assist you in the construction and installation of your ornamental pond.

Pond Location

Great care should be taken when selecting the site for your pond, as many factors will contribute to the success of your water feature.

Do not situate your pond in an area susceptible to water run off; the accumulation of silt and chemicals such as herbicides that may be washed into the pond will necessitate constant cleaning and will introduce levels of toxicity that will inhibit plant and fish life.

Check the position of nearby trees; large roots will be a problem when excavating and if cut and removed, may also grow back and damage the liner.

Installation Guidelines

After selecting the location, outline the desired shape of the pond. Before excavating, decide on the depth of the pond in order to determine the correct amount of slope to cut for the sides of the pond. After excavating, smooth the bottom of the pond and clear any foreign material.

Add approximately 50 mm of sand to the base of the pond to act as a “cushion” between the sub-grade and the pond liner. Alternatively, Permathene Ltd can supply you with a Syntex nonwoven geotextile to place under the liner; this will assist in protecting the liner from any damage in the presence of rocks, roots or other such objects.
Using a Syntex geotextile has the added benefit of protecting the sides of your pond from any damage caused by the above objects.

Dig an anchor trench a minimum of 300mm from the edge of the pond in order to bury the liner. This is very important as it prevents water and other foreign matter from getting underneath the membrane. The trench should be a minimum of 300mm deep.
Unfold the liner on the ground and smooth out any folds and creases. Drape the liner loosely in the pond making sure it overlaps and folds down into the anchor trench equally on all sides.

Partially fill the pond with water (1/2 full). This allows the weight of the water to push the liner into any voids or ripples in the sub-base, thus allowing for ample liner on the pond bed in order to avoid stretching due to ground settlement after filling. Continue until the pond is filled with water, smooth the membrane over the edge of the pond and down into the anchor trench, lay the liner along the bottom of the trench and partially up the far side. You can now trim off any excess liner.

Replace the fill from the anchor trench back on top of the liner, pressing down firmly. Avoid contact with the liner if replacing with a shovel or spade.

If you intend to place stones or rocks around the perimeter of the pond, you may want to use a strip of the geotextile mentioned previously to protect the liner from damage. If you intend to place a pump in the pond, remember to reserve space between the stones for the power cable. Approximately 48 hours after completion of the pond add plants and 72 hours after completion, add fish.

Technical Details

Permaliner 300, 500, 750,1mm, 1.5mm, 2mm, see physical properties (permalinerPS.pdf). Permaliner has excellent tensile strength and flexibility to withstand ground settlement and loading stresses, high tear and puncture resistance, and is free from additives such as solvents, plasticisers and lubricants. Manufactured to highest (EPA approved for potable water) standards.

For additional information regarding Permaliner™ FPA membrane and Syntex geotextiles contact Permathene Ltd. at 09 968-8888.