Soprasun 4AR provides complete waterproof integrity to roof structures by providing a double layer assurance of watertightness with a system that is unaffected by water over long periods of time.

Double layer is BRANZ Appraised, certificate 2015 - current

Soprasun 4AR is a hot torch applied bituminous waterproofing membrane system. The bitumen is modified with APP polymers and reinforced with 180gsm/m² non woven polyester. The system is a total of 7mm with Soprasun 3 (3mm) torch applied and then over-laid with aggregated Soprasun 4AR (4mm).

This specification deals with:
1. Manufacture of Materials
2. System Description
3. Surface Preparation
4. Application
5. Warranty
6. Maintenance
7. Producer Statement
8. Options

1. SUPPLY OF MATERIALS
All materials shall be produced supplied or specified by Nuplex Industries Ltd. To avoid incompatibility of component materials it is essential that Nuplex technical staff be consulted before any product other than those specified is used. In conjunction with structural concrete or heavy duty treated plywood, Soprasun will deliver long term, fully waterproofed, flat roofs.

2.1 Short Form Specification & SYSTEM DESCRIPTION
Soprasun 4AR is available in 3 forms: Soprasun 3 Plain (3mm), Soprasun 4 Plain (4mm) and Soprasun 4AR which is a 4mm cap sheet with a granule finish to provide durability and UV protection. The system is installed as follows:)

---

Australia
A Division of Nuplex Industries Limited
www.nuplexconstruction.com
New Zealand
A Division of Nuplex Industries (NZ) Limited
Auckland
T: +64 9 5836544       F: +64 9 5253709

---

This information appearing in this Document (Details) concerning the product which is the subject of the Document (Product), is either based on present technical knowledge and tests done by Nuplex or tests done by, and data supplied from third parties including you, the customer. Since the actual use by you and by others of the Product is beyond the control of Nuplex, no warranty or representation, express or implied is made by Nuplex regarding the suitability for such use. Nuplex accepts any liability arising out of the use by you of other products or materials, whether third party or not, that may be referred to in this Document. Nuplex recommends that you carry out your own tests as to the suitability of the Product for your purpose, regarding which you accept full responsibility. In addition, if any of the Details in the Document are based upon tests done by, and/or data supplied by any third party, Nuplex provides no warranties or representations in connection with those Details and you, the customer reserves any right you may have against Nuplex in connection with the accuracy, completeness or otherwise of the Details. The information in this Document is not to be construed as absolutely complete or accurate since additional information may be necessary or desirable when particular or exceptional conditions or circumstances exist or because of applicable laws or government regulations affecting use of the Product. Nuplex does not provide any warranty or representation to you that the Product does not infringe the intellectual property rights of any third party. All orders accepted shall be subject to the standard conditions of sale of Nuplex, which are on the back of our invoice. In accepting the Product you, the customer acknowledge and agree:

• The Product is or may be of a hazardous nature and that you, the customer, are responsible for the disposal of the container housing the Product in accordance with the requirements and regulations of the relevant supervising government.
• The Product has a limited shelf life and must be stored strictly in accordance with the guidelines and specifications related to it.
• Where the Details relate to Product tested by Nuplex, those Details are indicative only, regarding which there may be batch-to-batch variation.
• Nuplex’s liability for breach of any term, condition, guarantee or warranty (express or implied and concerning the information in this Document or the Product more generally) including any liability for direct or indirect consequential loss (including indirect loss of profits), is limited to the maximum extent permitted by law and, at Nuplex’s discretion, to either replacing or repairing the goods or paying the cost of replacing or repairing the goods, or in the case of services, supplying the services again.

www.nuplexconstruction.com  ●  ncpsales@nuplex.com  ●  FreePhone: 0508-882288  ●  FreeFax: 0508553344
a.) **Double Layer Torch on System - recommended**

Soprasun 3 torched directly to substrate. Soprasun 4AR is torched directly onto the prefixed Soprasun 3. Complies with Waterproofing Membrane Code of Practice.

b.) **Gutters**

First layer Soprasun 3 over torched with second layer of Soprasun 4 plain overcoated with one coat of Cural Aluminium coating at 4m²/Lt. Use Nuplex Surefix drain which mechanically clamps the membrane into the drain.

### Technical data

<table>
<thead>
<tr>
<th>Product</th>
<th>Soprasun 3</th>
<th>Soprasun 4AR</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll size</td>
<td>1 x 10m</td>
<td>1 x 10m</td>
<td>-</td>
</tr>
<tr>
<td>Thickness</td>
<td>3mm</td>
<td>4mm</td>
<td>7mm</td>
</tr>
<tr>
<td>Roll weight</td>
<td>31 kg</td>
<td>42kg</td>
<td>-</td>
</tr>
<tr>
<td>Weight /m² (installed)</td>
<td>3.3kg</td>
<td>4.7kg</td>
<td>8kg/m²</td>
</tr>
<tr>
<td>Description</td>
<td>Base Sheet</td>
<td>Cap sheet</td>
<td>Double layer system</td>
</tr>
<tr>
<td>Colour</td>
<td>Plain</td>
<td>Grey-Green or Black</td>
<td></td>
</tr>
<tr>
<td>Permeability to water</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Light reflectance, RV</td>
<td>n/a</td>
<td>Low, #1</td>
<td>Low, #1</td>
</tr>
</tbody>
</table>


Nuplex is a founding partner in the Waterproofing Membrane Association which originated the Torch-on code of practice.

**Soundproofing:** Double layer Soprasun is based on flexibilised bitumen. In this regard it will contribute to reduce sound impact transmission.

3. **SURFACE PREPARATION**

It is the contractor’s responsibility to inspect all areas which are to receive the waterproofing membrane and report any unsatisfactory conditions to the main contractor. Listed below are detailed specifications for preparing various substrates.

The surface to be waterproofed must be clean and sound. Remove all dust, dirt, laitence or any other contaminants which may hinder adhesion of the membrane.

**VENTILATION**

It is important that membrane roof structures are vented to prevent condensation build up and subsequent damage. Ventilate between roofing framing and to the exterior. Specific designs and advice are available. Ridge vent caps are an effective solution.

**ROOF SLOPE**

This Soprasun double layer roofing system will fully waterproof a flat roof. (However the New Zealand Building Code, E2/AS1, for a roof, requires a 2° slope. 1:30). Very low pitched roofs will pond unless care is taken with roof substrate preparation and attention to detail is applied to the sheet layout to
prevent water ponding behind laps. Nuplex offer specific design options to prevent ponding behind laps.
See table.

<table>
<thead>
<tr>
<th>Year</th>
<th>NZ Law</th>
<th>Origin</th>
<th>Roof pitch</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011 Aug 1st</td>
<td>Yes</td>
<td>E2/AS1</td>
<td>Roofs: 2° 1:30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sect. 8.5.1</td>
<td>Decks: 1:40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gutters: 1:100.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This implies still variances with Auckland council. Eg Gutters and decks.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nuplex recommendation</td>
<td>A double layer Soprema system will waterproof a flat roof and hold and be unaffected by standing water.</td>
</tr>
</tbody>
</table>

CONCRETE
Any hollows shall be filled and ridges ground smooth (use Nuplex Supaset). Surface must be free of any spalled areas, loose aggregate and sharp protrusions. Outside corners must be free of sharp edges.

Substrate must be dry. The use of Nuplex Aquaguard 101 is an option to isolate damp concrete. **Aerisol Flam ventilation sheet** is recommended (with vents) to control moisture being emitted from the concrete substrate. This is applied under the membrane sheets.

Control joints shall be treated as specified by architect, engineer and approved by membrane manufacturer. For suggestions see “detailing” on Nuplex website.

Slope adjustment
New NZBC code requirements mean that minimum falls must be adhered to.
Use **Nuplex MPS system** (membrane prefill system) to create falls and to correct undulations. (see datasheet). MPS is a system of Screed 20+ and Supaset to create new falls. This will dry promptly and accept membrane primer and torching.

BLOCKWORK
Soprasun 4AR system may be applied to smooth concrete block substrates.
Any pointed blockwork must be flushed out.
If blockwork is rough a well adhered coat of Nuplex FLC may be used to achieve a smooth substrate.

PLYWOOD
Plywood must comply with AS/NZS2269 for structural plywood. Plywood must be minimum 17mm, H3.2 treated CCA (waterbased treatment).
Refer CHH Ecoply Specification & installation guide June 2011
Plywood grade: Structural Square Edge H3.2 CCA, min. 17mm
Plywood is loose butted. Plywood must be fastened by stainless steel corrosion resistant screws (preferably 50mm stainless screws) at 150mm centres around the perimeter and 200mm centres within the sheets as per E2/AS1.
Roof frame spacing should be: as per Torch-on membrane code of practice.
As Roof Support, 17.5mm min, 600 x 600mm centres max
As Deck Support 20mm min., 400 x 400mm centres max.

All sides and ends must be nogged. Plywood sheets must be staggered. Refer to plywood suppliers charts for alternate roof usage/slope directions.
All fastenings must be countersunk. All joints must be left with an even uniform finish. Ply upstands must be strong and sound and be well supported and strengthened. Use epoxy and fibreglass if necessary to ensure adequate strength.

The engineering designer or plywood suppliers structural specification for roof structure and plywood installation shall override the Nuplex specification.

Install expansion joints in the plywood structure to allow for plywood movement. Plywood roof structures tend to move in sections (or “rafts”). Form joints in natural areas where movement is likely to occur. Nuplex provide control joint detailing. Roof runs (on plain flat structures) longer than 15m will require control joints.

**Special Note**
For the reinforcement and fire protection of Plywood structures: The use of Sopraboard is an attractive optional improvement for use over the plywood before the double layer system. Sopraboard is a sheet bitumen material which spans the plywood isolating many of the movements found over plywood joints. It also eliminates torching safety issues onto plywood. The Sopraboard is mechanically fastened in a staggered fashion. The Soprasun is then torched without primer, to the Sopraboard.

Sopraboard is also used in Roof renovation where the existing membrane and plywood is unknown. The Sopraboard is screwed through both the membrane and ply. A sound substrate is then produced for new double layer Soprasun.

Sopraboard is used with Nuplex insulated roof systems.


**VENTILATION**
Moisture builds up in roof cavities due to human activity below. With double layer membranes, that are impervious, this moisture cannot escape. Ventilation to the full roof cavity must be provided to prevent moisture build up in the cavity. It also helps prevent excessive heat build-up which causes excessive cyclic movement in the building. This ensures durability of the building elements (not the membrane which is unaffected by moisture). The vented area should be below the ply but above any insulation.

Side vents on opposite sides of the building are preferred with full cross ventilation designed into the structure. Distances exceeding 10m should have separate roof vents.

Nuplex provide vent systems. Ensure vents are correctly installed and select a type that will not allow water to enter the building in times of high rain, rain “bounce” or high wind.

For insulated roofs, side space ventilation is most effective as it is difficult to make effective penetrations through the membrane.

**COMPRESSED FIBRECEMENT SHEET**
Sheets must be fastened by screws. All fastenings must be well countersunk. All joints must be left with an even uniform finish. Any indentations shall be flushed out with a suitable flushing compound. Refer previous paragraph covering ventilation, upstands and expansion joints.

The suppliers structural specification for sheet installation shall override the Nuplex specification.

**ROOFING DESIGN & OTHER**
Any other substrate or areas with existing waterproofing membranes please refer to Nuplex Industries Ltd for advice. The designer must consider ventilation and heat build-up in the roof cavity. Excessive moisture build-up and heat build-up are detrimental to the whole building. Heat and moisture are simple to control with vents.
4. **APPLICATION**

Nuplex provide full lists of approved contractors.

**DOUBLE LAYER APPLICATION – the Nuplex recommended system**

**A. Membrane**

Apply Nuplex Membrane Primer at a spreading rate of 5m²/litre. To all interior and exterior corners hot torch apply a 100mm Soprasun 3 fillet. Hot tool chamfer all edges.

Plan the layout to allow for drainage from the insulation and the pebble ballast. Create stainless steel cages, perforated, to retain the ballast from the drain.

Install expansion joints (in the ply) to allow for plywood movement. The position of the joints will be specified by the roofing engineer. Nuplex provide expansion joint details.

Plan to install cavity vents if required or determined by the roof space structure. The builder may be required to provide cross ventilation, through the roof structure and cavities, above the insulation, from one side of the building to the other.

A Nuplex double layer roofing system will tank a fully flat roof (0º pitch). (However the NZ Building Code data is shown below.) Nuplex state that a double layer system is waterproof and will hold and resist ponding water.

**Gutters:** double layer system of Soprasun 3 over torched with Soprasun 4 and UV protected with a coat of Aluminous Cural at 4m²/Lt.

**Protrusions/Vents:** Install and/or waterproof these as per Nuplex detailing. Ensure double layers (minimum) of membrane are installed.

To main roof area hot torch apply a layer of Soprasun 3 with 75mm wide side laps and 100mm end laps. Hot tool chamfer all edges.

To parapets and upstands hot torch apply Soprasun 3 extending lap over main roof areas by at least 75mm.

Hot torch apply second layer of Soprasun 4AR to first layer ensuring that all laps are staggered.

**Chip colours** available ex stock: Green-Grey

Upstands should be made that are above the the height of the insulation and ballast.

Any terminations to vertical surfaces are to be finished under a flashing which is mechanically fixed and sealed with Nuplex NP40 polyurethane sealant.

**B. Separation layer**

Lay Polythene sheet over the Soprasun 4 AR. Overlap sheets by 150mm. This layer is to prevent any possibility of interaction with the membrane and the insulation. It also maintains the double layer as a unique waterproofing component.

**C. Insulation**

In a staggered fashion lay sheets of EPS expanded foam. Preference should be given to tongue and groove sheets.

Choose a thickness to give the insulation R-value required.

Lay around the drain cages.
Work carefully with the ballast to ensure the insulation is not blown away by wind.

C. Ballast
Carefully install ballast without damaging existing. 20mm smooth and clean river pebble is normal. Thicknesses of 50 -100mm are often used. Rake carefully and evenly to the drain cages.

5. DETAILS
Detail for upstands, penetrations, gutters, inlets, outlets etc are on our website
he details are all compliant with E2 AS1 (detail sections 8.5.) however the Nuplex membrane system is in double layer form. Pipe penetrations: use Soprema Interclip system; opposite

6. WARRANTY – for Double layer system
A warranty of 20 years is applicable to double layer Soprasun roof systems. This is in excess of the 15 year warranty required by law.
This warranty covers the performance of the membrane itself and does not warrant against excessive building movement. Only double layers systems are covered by the warranty. This applies to new work in accordance with the Building Code and E2/AS1.

8. MAINTENANCE
Ensure the pebble ballast is cleaned with anti – mould sprays.
Ensure the drains are free.
Soprasun 4AR is trafficable for maintenance around plant and machinery. It is not suitable for continuous public use and access. To increase access for maintenance and to improve and guide access, then use a modular system such as Boardwalk.
Regular inspections are to be carried out to identify any areas of damage. These can be repaired by applying a patch of Soprasun. The Curnoir/Cural system is method of rejuvenating older roofs or areas of surface damage. Cural is to be cleaned down and overcoated every five years with one coat of Cural at a rate of 500g/m².
Refer to maintenance datasheet for more information.
For overlaying use the fastened Sopraboard plus double layer membrane system.

9. PRODUCER STATEMENT
Soprasun 4AR is provided by Soprema as suitable as an exterior roof cladding in the New Zealand environment. As such it is compliant with the New Zealand Building Act. A warranty is supplied by the contractor. Double layer Soprasun 4AR is an alternative solution with the requirements of E2/AS1 July 2005.
A written opinion on Soprasun 4AR’s compliance with E2/AS1 as an alternative solution is available. Nuplex Industries Ltd are a founding member of the Membrane group Code of Practice for Torch-on membranes.
Nuplex are members of the Roofing Association of NZ.

BRANZ appraised 2014.