

# Technical Data Sheet



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## SOPREMA SOPRASUN 4AR - Double Layer Torch-on membrane system

### GENERAL

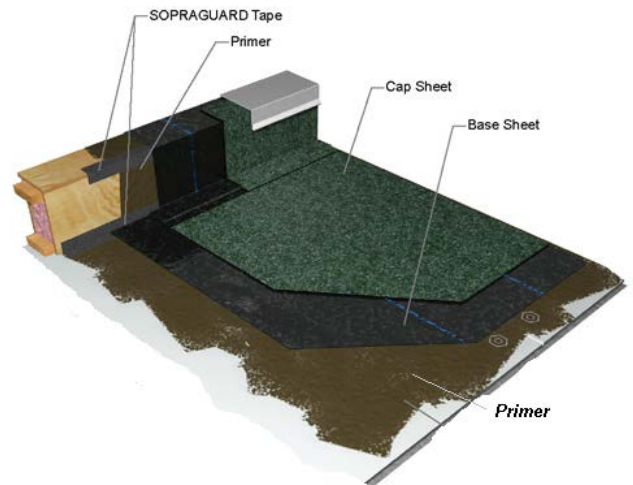
Soprasun 4AR provides complete waterproof integrity to roof structures by providing a double layer assurance of watertight-ness with a system that is unaffected by water over long periods of time.

### 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/m<sup>2</sup> 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. Decks
6. Warranty
7. Maintenance
8. Producer Statement
9. 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:)

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- 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 gives no warranty or representation as to the applicability for the particular use by you, the customer, of the Product and you the customer shall be responsible for ensuring that the Product is fit for your intended use.
- 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 election, 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.

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- 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 4m<sup>2</sup>/Lt. Use Nuplex **Surefix drain** which mechanically clamps the membrane into the drain.

### Technical data

Product	Soprasun 3	Soprasun 4AR	Combined
Roll size	1 x 10m	1 x 10m	-
Thickness	3mm	4mm	7mm
Roll weight	31 kg	42kg	-
Weight /m <sup>2</sup> (installed)	3.3kg	4.7kg	8kg/m <sup>2</sup>
Description	Base Sheet	Cap sheet	Double layer system
Colour	Plain	Grey-Green or Black	
Permeability to water	0%	0%	0%
Light reflectance, RV	n/a	Low, #1	Low, #1

#1: Use Chagall white chipped finish if a greater RV required or paint chips with Flexiglaze white.

BRANZ appraised:

[http://www.nuplexconstruction.com/pdf/Soprema\\_BRANZ\\_819.pdf#819.pdf](http://www.nuplexconstruction.com/pdf/Soprema_BRANZ_819.pdf#819.pdf)

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 flexiblised 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.

Year	NZ Law	Origin	Roof pitch
2011 Aug 1 <sup>st</sup>	Yes	E2/AS1  Sect. 8.5.1	Roofs 2° 1:30 Decks 1.5° 1:40 Gutters 1:100.  This implies still variances with Auckland council. Eg Gutters and decks.
	Nuplex recommendation		A double layer Soprema system will waterproof a flat roof and hold and be unaffected by standing water.

## 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 & installtion 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.

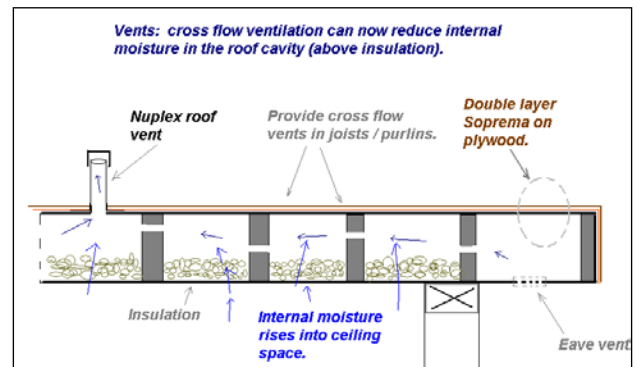
<http://www.nuplexconstruction.co.nz/pdf/Sopraboard.pdf>

### 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.



### 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**

Apply Nuplex Membrane Primer at a spreading rate of 5m<sup>2</sup>/litre. To all interior and exterior corners hot torch apply a 100mm Soprasun 3 fillet. Hot tool chamfer all edges.

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 (0° 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 4m<sup>2</sup>/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.

Hot torch apply second layer of Soprasun 4AR to all parapets and vertical upstands extending laps over main roof area at least 100mm.

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

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

#### 5. **DETAILS**

Detail for upstands, penetrations, gutters, inlets, outlets etc are on our website

(/roofing/details). The 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. **DECKS**

Decks that cover an internal part of the building are to be treated in exactly the same

ay described above. They are in effect a “roof”.

Protection of deck (roof) membranes are by the way of:

- Pavers over a polythene slip layer.



- Tiles on a 75mm concrete slab on a polythene slip layer.
- Nuplex pedestals supporting square pavers or timber squares. These are compliant with the Building Act as they provide direct access to the drained membrane surface. They also allow a 100mm or more of a step down in doorways. See data sheet on website.

These pedestals are available in a range of heights. Most of the are height adjustable (within a range) to allow for small changes in slope. <http://www.nuplexconstruction.com/pdf/Paving-Supports.pdf>

7. **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**

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/m<sup>2</sup>.

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.***

10. **OPTIONS**

(i) **Under Tiles**

Specify two layers of Soprasun 4. Tiles may be loose laid or bonded using modified Unifloor as per data . Use Supaset to create falls. Plastering with Unifloor over Soprasun **4AR** is preferred as the aggregate chips give better adhesion. Caution: beware of councils requirements for NON-direct bonding over habitable spaces.

Expansion joints are required. (See Decks, above for code compliant systems).

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

(ii) **Tanking**

Specify Soprasun 4, bonded vertically using a 75mm overlap. Mechanically fix and seal the top edge. Protect the membrane before backfilling.

(iii) **Mechanically affixed systems**

Nuplex supply **Soprema Soprafix HP**; refer to this datasheet. These systems are screw fastened with numerous site advantages. This system consists of Soprafix HP (2.5mm) screwed down with a staggered cap sheet of Sopralene Flam 180AR (4mm).



(iv) **Sopralene Flam SBS system**

This is a two layer system of Sopralene Flam 180 (3mm) and Sopralene Flam 180AR aggregated. This SBS system is very durable, flexible and resistant to UV and aging. This system includes Colvent / Colgrip insulated roof systems.

(v) **Copper membrane Roofing**

This is a double layer system of Sopralene Flam 180 (3mm) and Sopralast TV copper (4mm). This system has a true copper top skin which will age as normal copper. Must be double layer.

(vi) **Garden Roof Systems- Jardin**

[http://www.nuplexconstruction.com/pdf/Roof\\_Garden\\_Systems\\_Brochure.pdf](http://www.nuplexconstruction.com/pdf/Roof_Garden_Systems_Brochure.pdf)

This is a double layer system of Sopralene Flam 180 (3mm) and Sopralene Jardin 3.5mm. The Jardin is tough and resistant to root penetrations. This cap sheet is topped with aggregate chips and contains a root repellent material.

Roof gardens should incorporate excellent drainage and shallow rooting plants. Insulation and drainage may be combined for a green, energy conservative low environmental effect roof.

Jardin should be protected from excessive damage using [Nuplex NPX drainage sheet](http://www.nuplexconstruction.com/pdf/Drainage-Sheet_NPX.pdf).  
[http://www.nuplexconstruction.com/pdf/Drainage-Sheet\\_NPX.pdf](http://www.nuplexconstruction.com/pdf/Drainage-Sheet_NPX.pdf)

(vii) **Aerisol Flam**

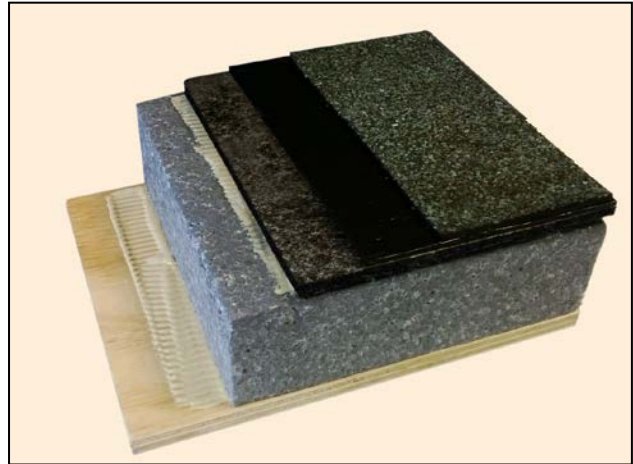
This is a system which is used under a double layer membrane roof. It contains holes which will allow horizontal ventilation.

Often used on concrete decks to allow water vapour from concrete to dissipate. It is not a membrane layer as it has holes.



(viii) **Flexitherm Insulated Roof**

This is a system of  
1.0 Adhesive bonded Graphite core insulation.  
2.0 Adhesive bonded Sopraboard prep sheet.  
3.0 Torched on Sopralene Flam 180  
4.0 and Sopralene Flam 180AR aggregated. This SBS system is very durable, flexible and resistant to UV and aging. It is commonly used **over Insulation** to provide thermal advantages.



This specification is to be read in conjunction with relevant technical data sheets. If in any doubt or confusion exists please contact Nuplex Industries Ltd.