

# Technical Data Sheet

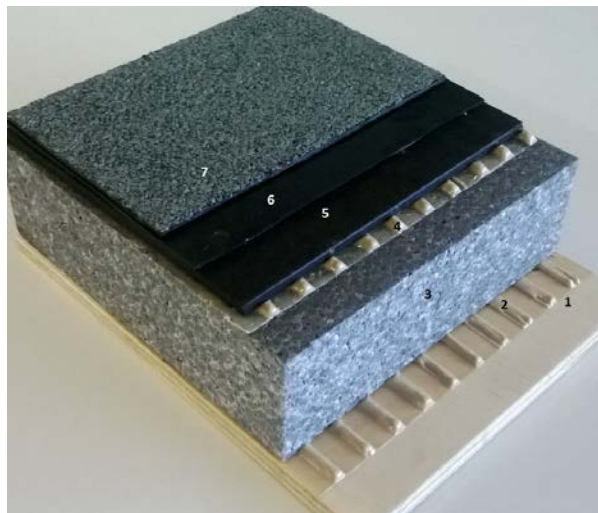
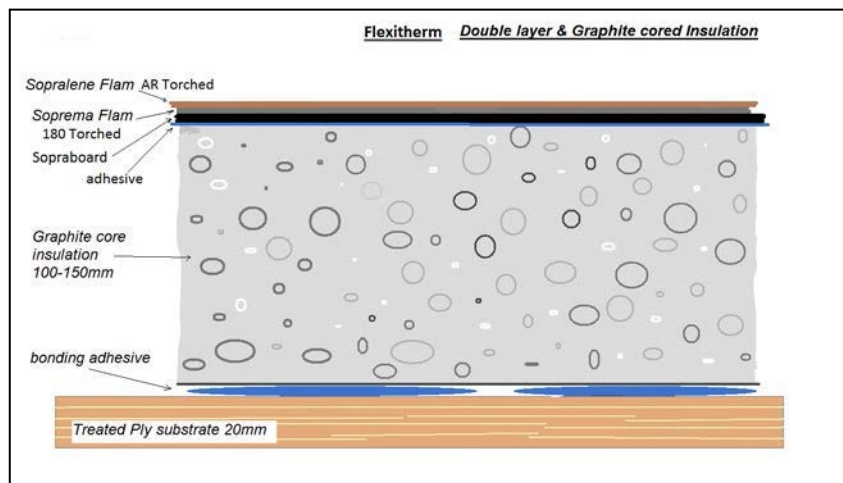
## FLEXITHERM Double layer with Graphite Core insulation



### DESCRIPTION:

Graphite core insulation is graphite enhanced expanded polystyrene insulation with superior insulation properties.

It is used to provide insulation in Soprema warm roof systems. It is used to construct an insulated roof system consisting of a double layer membrane. The bottom layer is adhesive bonded Sopraboard rigid sheet applied over the graphite core insulation. Then the base and cap sheets are then torch applied over. This allows flat/low pitch roofs to achieve the required R-rating. A slope may be created by cutting the graphite core insulation to a fall. The minimum thickness shall be that thickness that gives the zoned R-rating required for that roof.



Key for image:

7. Sopralene Flam 180AR / Soprasun 4AR
6. Sopralene Flam180 / Soprasun 3
5. Sopraboard
4. Polyurethane adhesive
3. Graphite core Insulation
2. Adhesive
1. Substrate

### Technical data:

- Insulation contains a fire retardant. Fire tested to AS 2122.1-1993
- Prevent contact with PVC electrical wires
- Max sheet thickness 815mm

#### INSULATION R-value

- 50mm R1.61
- 75mm R2.41
- 90mm R2.9
- 105mm R3.38

Product	Graphite Core insulation
size	Many sheet sizes
Thickness	To meet code & falls. Normally min. 90mm. but can be any thickness to cut to create falls.
weight	22kg/m <sup>3</sup>
Weight /m <sup>2</sup> (installed) at 100mm	2.2kg
Description	insulation
Permeability to water	Low
Light reflectance, RV	n/a

According to H1-Energy efficiency, the NZ Building code requirements for a Membrane roof on Plywood are:

Zone and R-rating to exceed	Min. Thickness of Graphite Core required.
Zone 1 2.9	90mm
Zone 2 2.9	90mm
Zone 3 3.3	105mm

### RECOMMENDED USES:

- Insulation under Double layer flexible sheet waterproofing on Flat and or low pitch roofs and up to 20% pitch.
- Over concrete and well fixed plywood.

### SURFACE PREPARATION:

**FLEXITHERM Graphite Core Insulating System** installation instructions.

#### Four component system details:

1. Durable polystyrene safe adhesive, NPU
2. Graphite Core EPS insulation (GCI)
3. Durable polystyrene safe adhesive, NPU
4. Sopraboard HD base sheet
4. Sopralene Flam 180 or Soprasun 3 base sheet.
5. The cap sheet is either Sopralene Flam 180AR or Soprasun 4AR.

## System Components

Product	NPU Polyurethane adhesive	Graphite Core EPS	Sopraboard	NPU Polyurethane adhesive	Sopralene Flam 180	Sopralene Flam 180 AR
size	6.5Kg pail	Many sheet sizes	1.2 x 1.2m	6.5Kg pail	1 x 10m	1 x 8m
Thickness	1m <sup>2</sup> /lt min	To meet code & falls. Normally 90mm	4.9mm	1 m <sup>2</sup> /Lt	2.5mm	4mm
Weight	n/a	22kg/m <sup>3</sup>	9.5kg	n/a	31kg	38kg
Weight /m <sup>2</sup> (installed)	0.5kg	2.2kg	6.6 /m <sup>2</sup>	0.5kg	3.1kg	4.9kg
Description	adhesive	insulation	Fiberglass reinforced, bitumen board	adhesive	base sheet	Cap sheet
Permeability to water	0%	Low	<0.1	0%	0%	0%
Light reflectance, RV	n/a	n/a	n/a	n/a	n/a	Low depending on colour

- Gives required roof R-value.
- Provide sound reduction (rain noise).
- Low roof weight. <18 kg/m<sup>2</sup>
- No wind leakage
- Reduces risk of joint popping. Insulation sheets assist in minimising ply and structure movement.
- Sopraboard provides a solid base on top of the insulation allowing direct torching.
- Fast, torch applied First layer.
- Fast, torch applied second layer.
- Graphite Core EPS has a higher insulating value than normal EPS. This system is based on product and information from a NZ manufacturer on Black pearl Neopor which also contains a fire retardant.
- Based on NZ sourced sheet which allows for more flexible building times and lowers transportation cost of pre-expanded insulations. This allows exact site measurement prior to installation.
- Roof falls can be created with the Graphite core slabs. This allows the designer to have flat plywood but create the required fall in the insulation. Also drains and features.
- Particularly suited to roof gardens with insulation

### Flexible

- Simple application
- Fully bonded
- Soprema systems are modified bitumen membranes for long term flexibility and durability. Ability to take repeated stress and strain without peaking.

### LIMITATIONS

- This system is suitable for mild climates only where there is no risk of firm ice or heavy snow. In these areas use **Graphite core PLUS** which includes a vapour barrier under the insulation and the system is mechanically fastened.
- **Graphite core PLUS**, which includes a vapour barrier under the insulation, may be needed on concrete to prevent moisture rising out of the concrete.
- Whilst the roof is quite sturdy it is not a trafficable roof. Ie for general activity purposes but may be accessed for maintenance.
- Take great care with roof penetrations; avoid if possible. These are complex roofs.
- Do not allow PVC coated electrical cables to come into contact with this insulation. Use PE tapes or special conduits.

#### Optional – additional materials required.

- Use Aquaguard 101 onto the concrete first if the system is to be laid on concrete
- Use Situclad EWS if a vapour barrier is required on top of the substrate.

## **SURFACE PREPARATION:**

### **Concrete**

Allow full 28 days cure time after concrete pour. U3 concrete finish specified. Ensure the surface is dry. Prime with Aquaguard 101.

### **Plywood**

Plywood must comply with AS/NZS2269 for structural plywood. Plywood must be minimum 17mm, H3 treated CCA (waterbased treatment). Plywood must be fastened by corrosion resistant screws (preferably 50mm stainless screws) at 150mm centres around the perimeter and 200mm centres within the sheets as per E2/AS1. Frame center spacing should be at a maximum of 600mm. Center nog joists at 1200mm. 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. Pre-prime with Neoprime.

### **ROOF SLOPE**

This double layer roofing system will fully waterproof a flat roof. (However the New Zealand Building Code, E2/AS1, requires a 1.5° slope. 1:40). Some local bodies specify a minimum 2° slope. 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 minimise water ponding behind laps.

The engineering designer or plywood suppliers structural specification for plywood installation shall override the Allnex 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. Allnex provide control joint detailing. Roof runs (on plain flat structures) longer than 15m will require control joints.

**VENTILATION** – the need for roof space ventilation is to be specified by the designer; it depends on the design.

**This system is a warm roof and the need for ventilation is lower but is still required.** Ensure no enclosed roof spaces allow the accumulation of moisture.

### **Adhesive application:**

The adhesive sets up and dries quickly. Avoid very hot and windy situations. Mix the adhesive correctly in the correct ratio. Apply the NPU adhesive with notched trowel (notches 5mm high x 7mm wide x 50mm apart) and lay the insulation sheet into the wet adhesive. Work quickly. Weigh the sheet to ensure full surface area contact.

Practice this process on sheets & small pieces before commencing work. Caution: it can be deceptive about the applied adhesive rate. Use the recommended amount or more. Do NOT glue the sheet edges together.

### **INSULATION**

Graphite Black Core EPS (2400 x 1200mm or other sizes) should be laid into the wet adhesive on the substrate butted and joints staggered. The minimum thickness is that which achieves the code. Above that the EPS can be cut to slope up to form falls or drains. Do not glue the edges together. The adhesive has only a short working time. Take great care to ensure the adhesive is "active" and the sheet is bonded. If in doubt, remove and replace the sheet.

Take great care with roof penetrations; avoid if possible.

Use sturdy metal angles to support at edges and terminations.

Do not allow PVC coated electrical cables to come into contact with this insulation. Use PE tapes or special conduits.

### **Boards**

Onto the installed insulation lay Sopraboard using NPU adhesive again. Apply the NPU adhesive with notched trowel (notches 5mm high x 7mm wide x 50mm apart) and lay the Sopraboard sheet into the wet adhesive. Install in a staggered brick fashion. Loose butt joint.

Allow to cure.

### **MEMBRANE:**

Application

Ensure the site is clean and tidy and extinguishers and safety equipment are available and ready on the roof. Check the insulation is sound and complete prior to membrane installation.

#### **First Layer**

Start from the lowest point and lay sheets with the correct overlap. Sopralene Flam 180 / Soprasun 4AR is bonded directly to the Sopraboard by torchon process.

Hot tool chamfer all edges.

The edges are overlapped by 75mm and the roll ends by 100mm.

Second Layer -Sopralene Flam 180AR / Soprasun 4AR

Start from the lowest point and lay sheets with the correct overlap.

Hot torch apply directly to the Sopralene Flam 180 with 75mm side laps and 150mm end laps.

Hot tool chamfer all edges.

Note: Stagger all joints between two layers to ensure joints do not line up.

Double check the roof for joint integrity.

Complete all flashings.

Complete all work and clean site.

**WARRANTY:**

Sopralene Flam / Soprasun come with 20 year product warranties which comply with the 15 year roofing requirement relating to E2/AS1. Material and specification warranty provided by Soprema. Additional warranties are provided by the contractor.

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The logo for Allnex, featuring the word "allnex" in a bold, lowercase, sans-serif font. Above the letters "i" and "x" are horizontal lines in red and green respectively.

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