



RADIANT BARRIER

REFLECTIVE



ENERGY SAVER



FIRE PERFORMANCE



SANS 428

SANS 10177-9

SANS 10177-10

SANS 10177-11

SUNSPUN SULATION

NEXT



SPUNSULATION PRODUCT RANGE

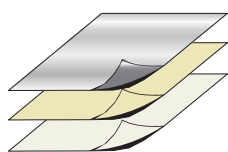
Product Overview

Spunsulation Radiant Barriers are a range of products manufactured for all sectors of the construction industry, that require reflective insulation foils for roofing, walling and insulation applications. These products are manufactured by laminating a non-woven polypropylene spunbond membrane to highly reflective aluminium sheets which create a technologically advanced product with high-performing physical properties (see spec sheet). Spunsulation Radiant Barriers have the normal functions of technical roofing membranes, but provide the added benefit of being a reflective insulation material, which adds to indoor comfort and reduced energy consumption.

PRODUCT - RADIANT BARRIER

PRODUCT SPECIFICATIONS

DOMESTIC



Aluminium



Bonding Layer

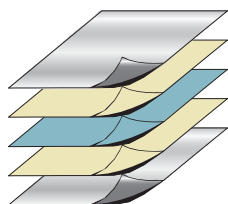


Spunbond

Domestic Spunsulation is utilised in residential homes constructed with a pitched roof.

Area per roll:	45m ²
Length:	30m
Width:	1.5m
Mass:	5,27kg
Grammage:	117g/m ²
R Value :	1.05

COMMERCIAL / LIGHT INDUSTRIAL



Aluminium



Bonding Layer

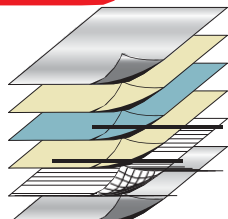


Spunbond

Commercial / Light Industrial Spunsulation is utilised in commercial buildings such as offices, shopping centres, schools and community halls which are constructed with a pitched roof.

Area per roll:	50m ²
Length:	33.33m
Width:	1.5m
Mass:	7,94kg
Grammage:	159g/m ²
R Value :	1.52

HEAVY INDUSTRIAL



Aluminium



Bonding Layer



Spunbond



Reinforcing Scrim

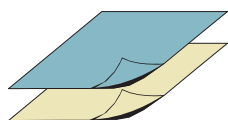
Industrial Spunsulation is utilised in factories and warehouses that are constructed with open steel framed roofs and no ceilings are used.

Area per roll:	50m ²
Length:	33.33m
Width:	1.5m
Mass:	11.7kg
Grammage:	220g/m ²
R Value :	1.52

PRODUCT - UNDERTILE MEMBRANE

PRODUCT SPECIFICATIONS

UNDERTILE MEMBRANE



Spunbond



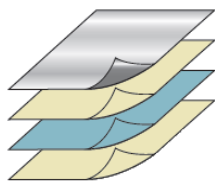
Polyolefin Coating

Spunsulation Undertile Membrane is used in Domestic and Commercial applications which are constructed with a pitched roof.

Area per roll:	45m ²
Length:	30m
Width:	1.5m
Mass:	3,87kg
Grammage:	86g/m ²

SPUNSULATION PRODUCT RANGE

ILLUMINA



	Aluminium
	Bonding Layer
	Spunbond
	Coating

Spunsulation Illumina is utilised in warehouses and commercial retail buildings that are constructed with open steel framed roofs and no ceilings are used.

Area per roll:	50m ²
Length:	33.33m
Width:	1.5m
Mass:	9.1kg
R Value :	1.01

How It All Began

The Spunsulation Radiant Barrier product line was conceptualised by Spunchem International as the answer to a need for a high quality, technologically advanced radiant barrier.

Spunchem developed the product name “Spunsulation” from two words – “Spun” from “Spunbond”, the core product used, and “sulation” from “insulation” – explaining the products ability to insulate against cold and heat.

Spunchem’s wealth of knowledge and experience in laminated and unlaminated spunbonded products allowed them to develop a radiant barrier of world class standards, which was facilitated by their in-house R&D department.

Spunchem, through its appointed distributors, are the pioneers in the next generation of Radiant Barriers.

Products Are Accredited & Certified By:



FIRE PERFORMANCE 	SANS 428
	SANS 10177-9
	SANS 10177-10
	SANS 10177-11



TECHNICAL SPECIFICATIONS

PRODUCT	BUILDING REGULATIONS REQUIREMENTS	CERTIFICATION	GSM
			NWSP 130.1.R0 (15)
Domestic Single Sided Foil	A13(1)(a) Materials	Agreement 2009/366	117
Commercial / Light Industrial Double Sided Foil	A13(1)(a) Materials	Agreement 2020/605	159
Heavy Industrial	A13(1)(a) Materials	Agreement 2020/606	220
Illumina			185
Contractor's Choice			140
Contractors Membrane	A13(1)(a) Materials	Agreement 2009/341	86

PRODUCT	R-Value (m2.K/W)	Tensiles (N)		Elongation (%)	
	SANS 1381-4:2013	NWSP 110.1.R0 (15)		NWSP 110.1.R0 (15)	
		MD	CD	MD	CD
Domestic Single Sided Foil	1.05	135	135	40	40
Commercial / Light Industrial Double Sided Foil	1.52	140	140	70	70
Heavy Industrial	1.52	260	210	50	50
Illumina	1.01	210	210	18	18
Contractor's Choice	1.52	160	110	-	-
Contractors Membrane	N/A	150	150	40	40

PRODUCT	Resistance to tear (N)		Hydrostatic head (mm)
	NWSP 110.1.R0 (15)		Spunchem
	MD	CD	
Domestic Single Sided Foil	100	100	>2000
Commercial / Light Industrial Double Sided Foil	140	140	>2000
Heavy Industrial	190	250	>2000
Illumina	210	190	>2000
Contractor's Choice	70	70	>1000
Contractors Membrane	70	70	>1000

THE SCIENCE BEHIND SPUNSULATION

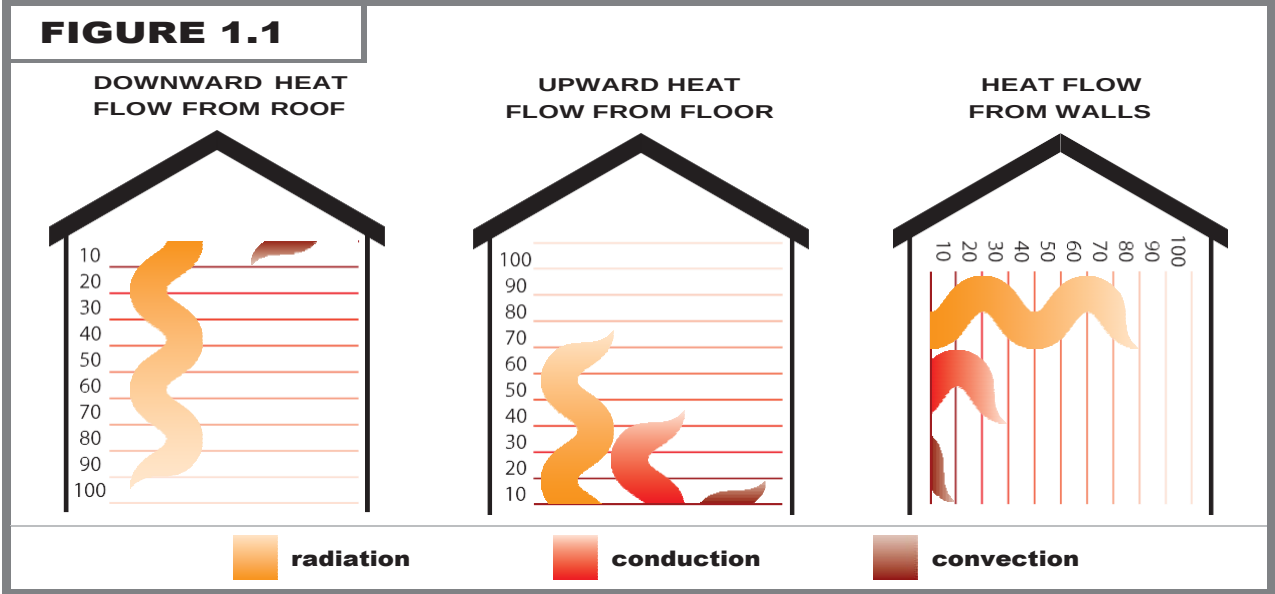
Radiant Barrier

In order to be classed as a radiant barrier, the product should reflect between 95% and 97% of all radiant energy. This means that the radiant barrier would have an emissivity of between 0.05 and 0.03.

EMISSIVITY OF BUILDING MATERIALS										
MATERIAL SURFACE	Asphalt	ALUMINIUM FOIL	Brick	Concrete	Glass	Fibreglass/Cellulose	Wood	Silver	Enamel Paint (black/white)	Lacquer Paint (black/white)
EMISSIVITY	0.90-0.98	0.03-0.05	0.93	0.85-0.95	0.95	0.8-1.0	0.90	0.20	0.91	0.80

To understand the relevance of this, we need to look at the different types of heat transfer that occur, namely CONDUCTION, CONVECTION and THERMAL RADIATION.

Thermal radiation is responsible for between 90% and 93% of radiant heat that is transferred in a downward flow from the roof, and up to 80% of the heat transfer through side walls of the building, [Fig. 1.1] while conduction and convection play a nominal role.



Spunsulation Radiant Barriers reduce energy costs by reflecting radiant heat energy by utilising the amazing reflective properties of aluminium. This works well (but oppositely) in both summer and winter months by keeping the heat from moving through the barrier [Fig. 2.2]. Spunsulation Radiant Barriers are not like bulk insulation, which slows down or resists heat transfer because of its mass.

FIGURE 1.2

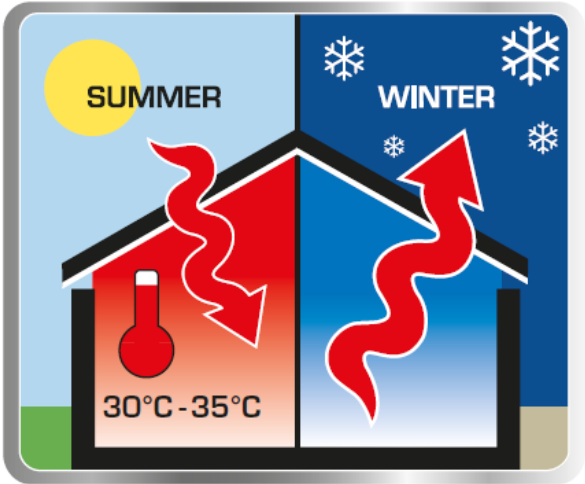
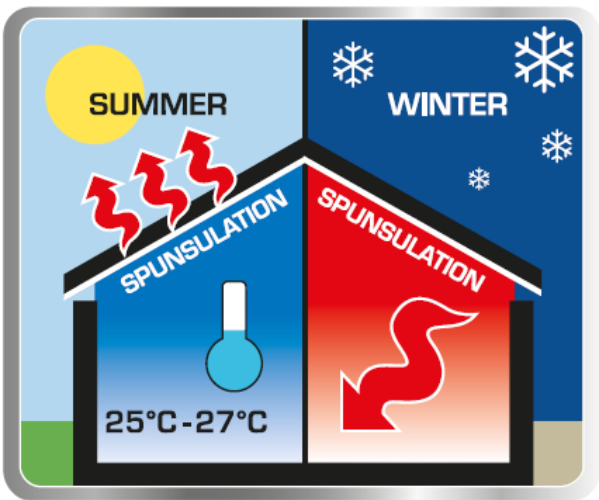


FIGURE 1.3

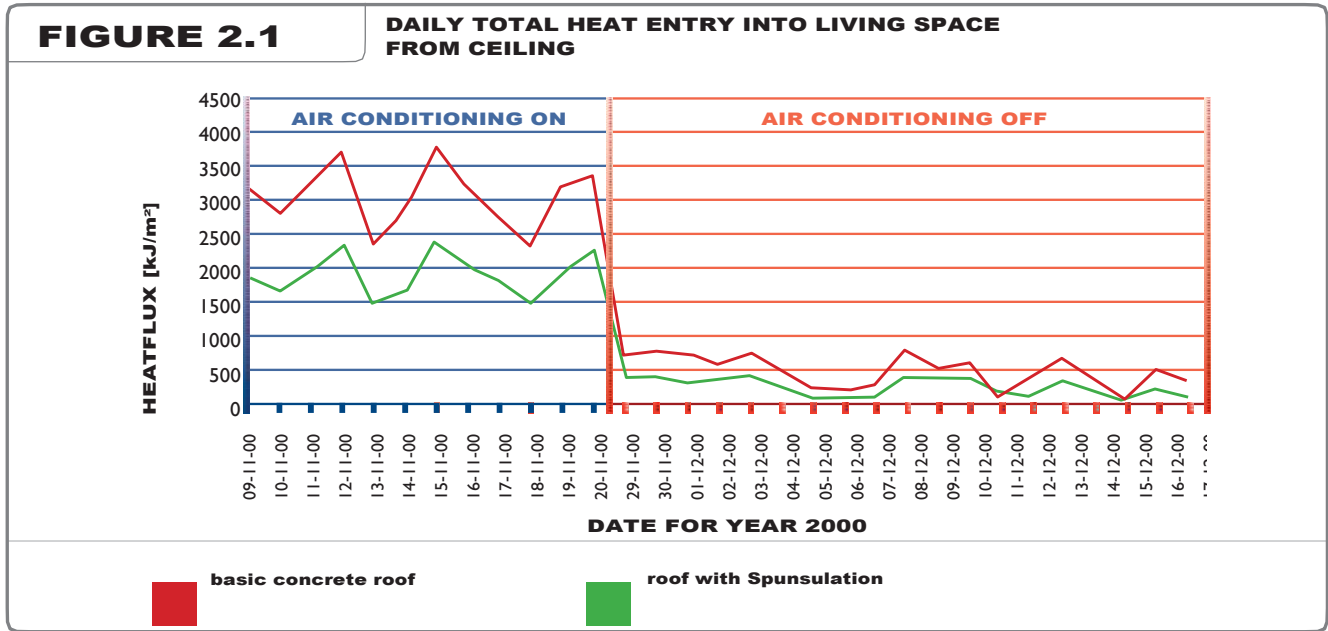


COST EFFECTIVE ENERGY SAVINGS

The Benefits of Spunsulation

HEAT FLUX REDUCTION GRAPH

The graph below shows the amount of heat flux entering the roof space per m² while trying to maintain the room temperature at 25°C using an air conditioner. The uninsulated roof has an average heat flux of 3000kJ/m² while Spunsulation Radiant Barrier has an average heat flux of 2000kJ/m². The difference in heat flux is thus 1000kJ/m² between the two installations, indicating that a third less heat energy has entered the roofspace.



How Much Will You Save?

COST PER kWhr BY MUNICIPAL REGION		- R0,51*			
AREA SIZE OF HOUSE	60 m ²	140 m ²	200 m ²	260 m ²	300 m ²
HEAT FLUX [kJ/m ²] @ 1000kJ/day	60000	140000	200000	260000	300000
kJ SAVING PER 24 hrs	2500.00	5833.33	8333.33	10833.33	12500.00
CONVERSION kJ to kWhrs	0.70	1.63	2.33	3.03	3.50
kWhrs PER 8 AIRCONDITIONING hrs	5.60	13.07	18.67	24.27	28.00
SAVINGS PER DAY	R2,86	R6,66	R9,52	R12,38	R14,28
SAVINGS PER MONTH	R88,54	R206,58	R295,12	R383,66	R442,68
SAVINGS PER YEAR	R1062,43	R2479,01	R3541,44	R4603,87	R5312,16

RETURN ON INVESTMENT					
AREA SIZE OF HOUSE	60 m ²	140 m ²	200 m ²	260 m ²	300 m ²
ROOF AREA [house area x 1.4]	84m ²	196m ²	280m ²	364m ²	420m ²
PAYBACK AT RATE OF R12,50/m ² *	R1050,00	R2450,00	R3500,00	R4550,00	R5250,00
PAYBACK PERIOD [yrs]	1	1	1	1	1

*Illustrative value only [Note:] All calculations are estimates only and should not be taken as a scientific calculation. These tables assume that a mechanical (air conditioner) method of temperature regulation has been employed, although airconditioners are not always used, a cooler environment leads to other appliances being more efficient, for example, fridges not having to work as hard, and no need for the use of electric fans and conducting systems.

INSTALLATION GUIDE

Domestic / Commercial / Light Industrial Installation

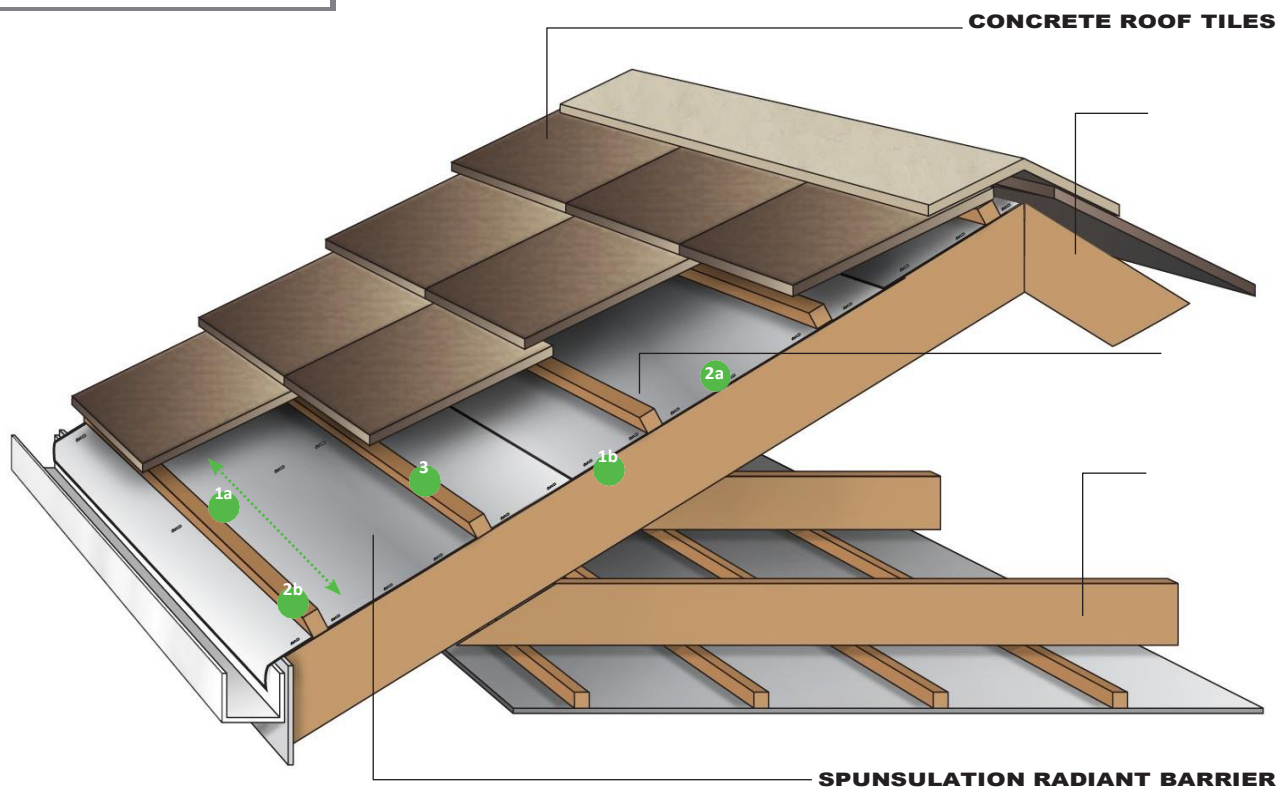
The Spunsulation Roofing Radiant Barrier is to be installed by contractors and roof erectors in accordance with the Building Regulations of South Africa.

INSTRUCTIONS

- 1 The membrane is installed horizontally across the rafters, starting at the eaves and working towards the ridges of the roof (1a), with each subsequent layer overlapping the lower layer by 150 mm (minimum), with the overlapping line of 150 mm facing upwards (1b).
- 2 Each horizontal run must be installed with a drape of 10 mm between rafters or truss centres. The membrane is tacked to the trusses with corrosion resistant staples or E.P clout nails (2a) to secure the membrane in position until the battens are installed on top of the Spunsulation Roofing Radiant Barrier. The membrane between the trusses must be sufficiently taut, while allowing a shallow trough to facilitate run-off beyond the wall or into the gutter, should rain water penetrate the tiles (2b).
- At ridges and hips, a layer of Damp Proofing Course (DPC) should be installed over the apex on top of the roofing radiant barrier. (See Page 8, Figure 4.3)
- In valleys, a strip of Spunsulation Roofing Radiant Barrier at least 600 mm wide must be laid in each valley, but under the main roof barrier, and be held down by valley battens where used. (See Page 8, Figure 4.6)
- 3 Tiling battens should be installed as soon as possible to prevent damage to the membrane by wind, and roof tiles placed to minimise exposure to the sun. Standard methods of workmanship should be used to apply Spunsulation Roofing Radiant Barrier at penetrations and abutments.
- It must be ensured that the roofing radiant barrier is turned up to less than 50 mm at all abutments to be overlapped by the flashings, and that it overlaps the lining tray by not less than 100 mm at the back face of any abutment.

Any damage to the membrane should be sealed as recommended by the manufacturer.

FIGURE 3.1



DIAGRAMATIC REPRESENTATION OF STEPS TO LAYING SPUNSULATION

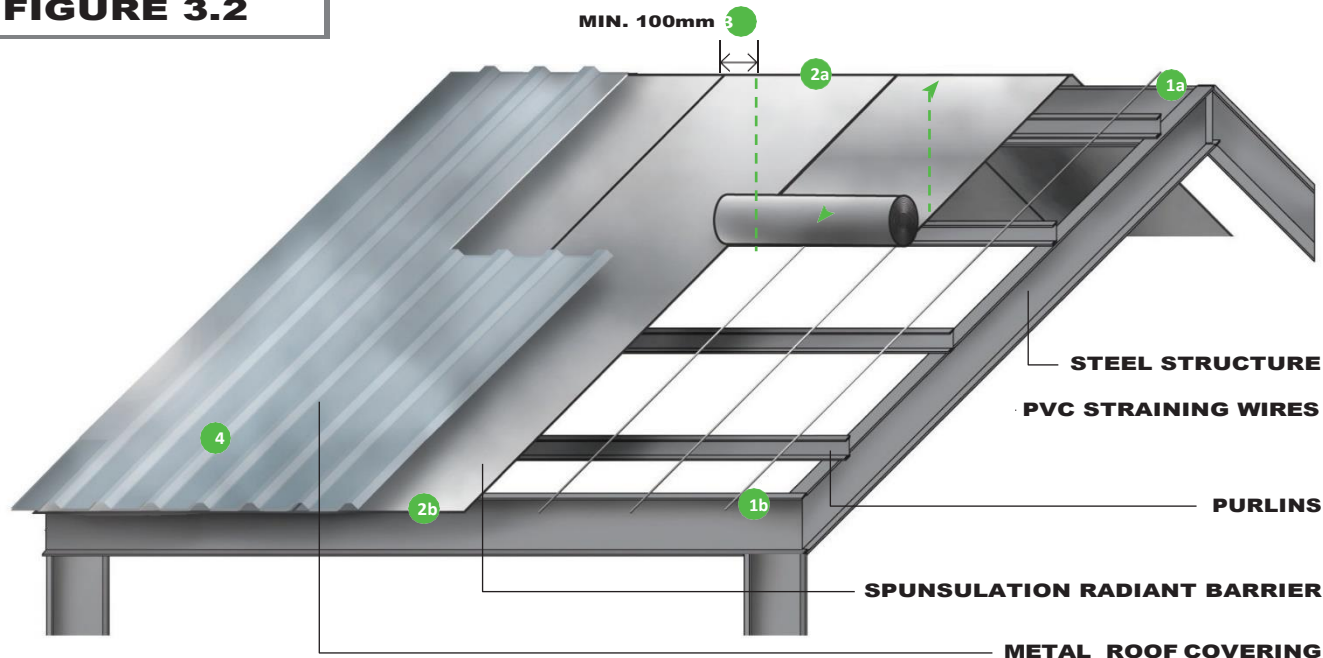
INSTALLATION GUIDE

Industrial Installation

INSTRUCTIONS

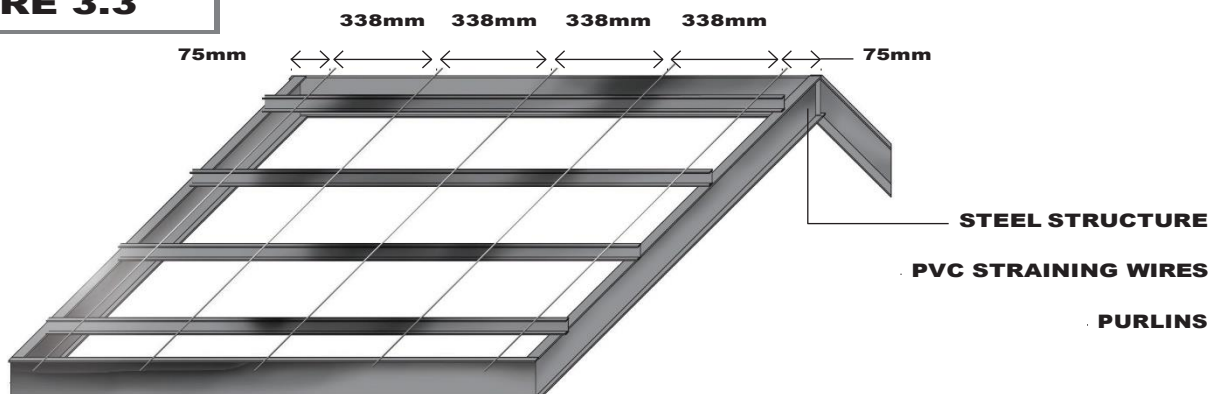
- 1 Polyvinyl chloride (PVC) coated straining wires are secured from the top apex purlin (1a), over intermediate purlins to the bottom eave purlin at 338 mm centers (1b). The first straining wire is secured 75 mm away from the gable end. All wires are evenly tensioned ensuring that cut ends face downwards. **Note:** All other applications to comply with the National building regulations and codes of practice.
- 2 The Spunsulation Radiant Barrier is laid over the straining wires ensuring that it is squared off to the membrane that has markers at 75mm and 100mm and is secured to the apex purlin using double-sided tape (2a). The membrane is evenly tensioned and secured to the eaves purlin again using double sided tape (2b).
- 3 All subsequent layers of Spunsulation Radiant Barrier are to be fixed as above with and not less than 100 mm overlap over the previous sheet. Straining wires must be positioned at the centre of the overlaps and not less than 50 mm from the sheet edges.
- 4 Roof sheeting is installed as soon as possible of Spunsulation Radiant Barrier has been installed.

FIGURE 3.2



DIAGRAMATIC REPRESENTATION OF STEPS TO LAYING SPUNSULATION

FIGURE 3.3

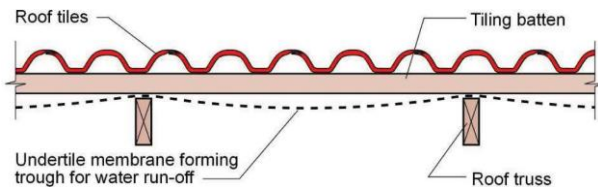


GUIDE TO SETTING OUT WIRE SPACINGS

OTHER INSTALLATION METHODS

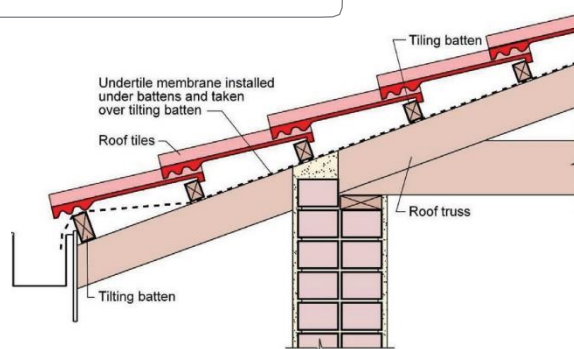
SABS-Approved Methods

FIGURE 4.1



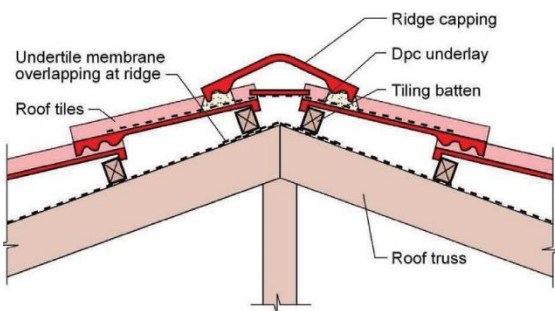
Cross-section of roof showing undertile membrane position

FIGURE 4.2



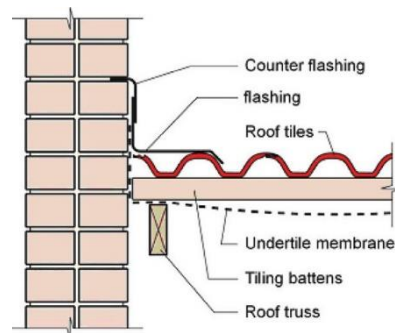
Details at roof eaves

FIGURE 4.3



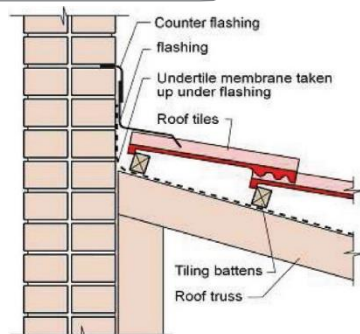
Ridge / apex detail

FIGURE 4.4



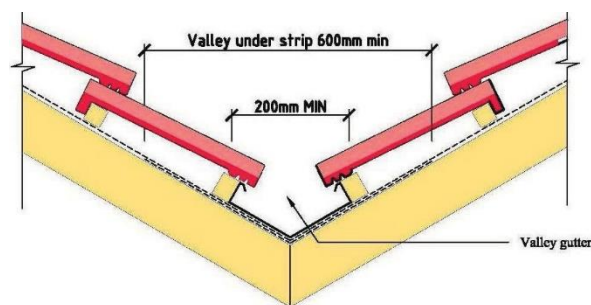
Typical parapet wall detail

FIGURE 4.5



Typical side wall detail

FIGURE 4.6



Open valley detail

Protection of the Membrane

The effects of exposure to UV-light can reduce the service life of the membrane and protection is required. The rolls must be stored under cover and when removed from the packaging, the membrane must be installed as soon as possible and the roof covered as soon as practicable. Protection is also required against traffic on the ground, during storage, during the installation process and once installed.

Storage Instructions

Store Spunsulation in a cool, dry environment. Keep out of direct sunlight. Do not over-stack/overload in storage to prevent product distortion or creasing from taking place. Store on a raised, flat surface free of sharp protrusions.