



COOL LITE IR

SOLAR CONTROL ROOF SHEETING

Cool-lite IR reduces interior heat build up while maintaining the highest level of light transmission



Cool-lite IR Solar Control Roof Sheeting

Ampelite have developed a new family of polyester fibre reinforced solar control roofing products, available in both single and dual skins. These new products significantly reduce solar transmission while simultaneously offering high levels of light transmission, helping save energy costs for cooling and lighting commercial and industrial buildings.

Cool-lite IR Solar Control Roof Sheeting controls heat and allows high level of light to help save on energy costs

With the sky-rocketing cost of energy production, today's buildings call for energy efficient designs. Allowing high levels of natural light into buildings can reduce energy costs associated with artificial lighting. However allowing natural light into buildings can lead to rapid interior heat build up due to penetration of the solar heat from the sun. This, in turn, can raise energy costs for cooling the building. *Cool-lite IR* is premium grade sheeting with the same highly UV resistant gel coated surface as Ampelite WonderGlas GC. Now you can turn the most powerful light source in the universe into the most effective, low cost, low temperature workplace lighting. The full test reports are available from Ampelite (NZ) Limited.



Quality Endorsed Company

AS/NZS ISO 9002
Licence QEC 4787
Standards Australia

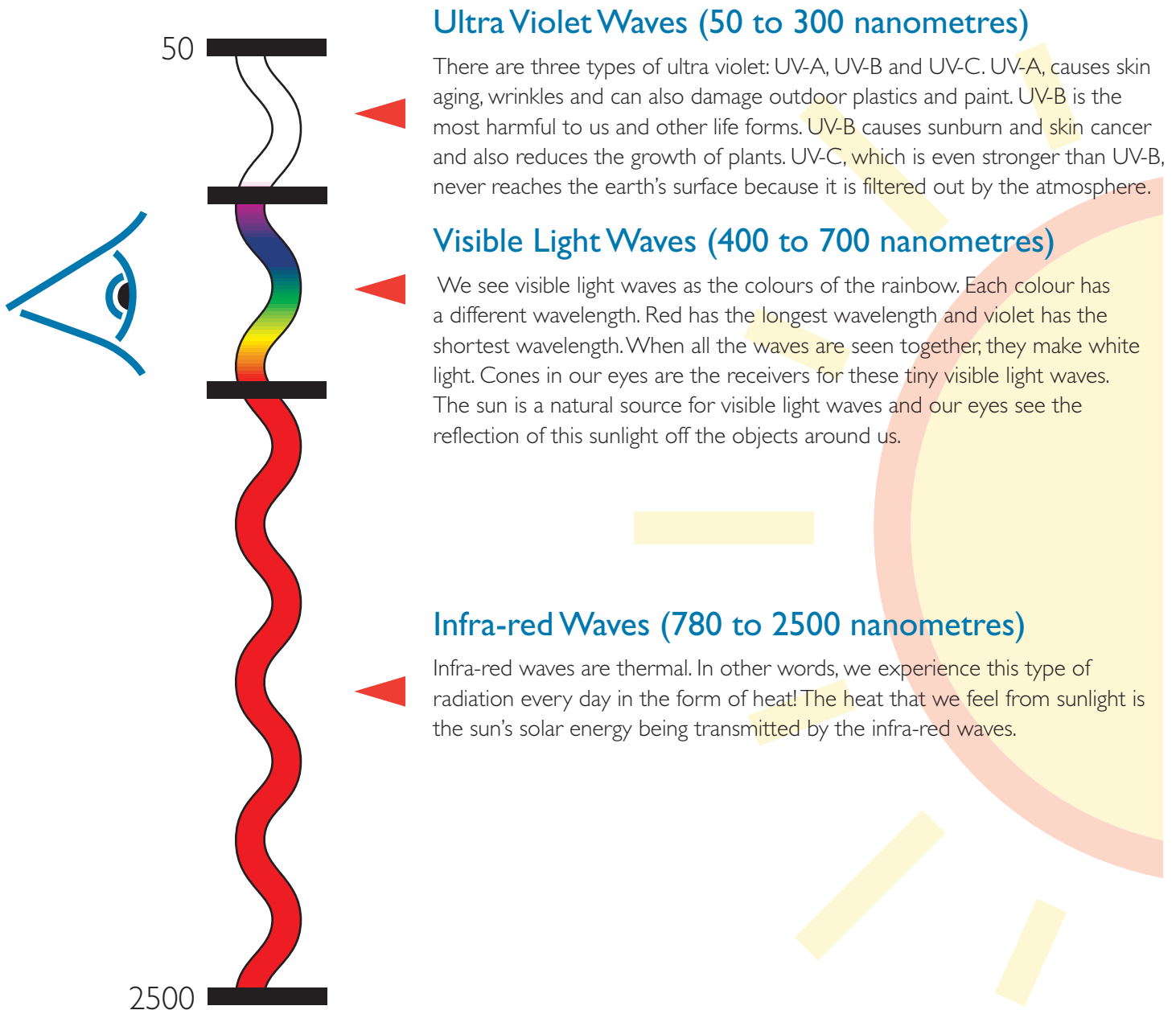


AMPELITE
makes light work!

What you need to know about light

We see things every day, from the moment we get up in the morning until we go to sleep at night. We look at everything around us using visible light. Visible light waves are the only part of the light spectrum that we can see and forms a very small portion of what is called the 'electromagnetic spectrum'. The electromagnetic spectrum is measured in nanometres, which are 1 millionth of a metre. The electromagnetic spectrum includes all

types of radiation including x-rays used at hospitals, radio waves used for communication and even the microwaves you cook food with. The three parts of electromagnetic spectrum that are of interest to us are the **ultra violet** rays that are harmful to our skin, the **visible light** waves, the light we use to see with and the **infra-red** waves or thermal waves that carry a large percentage of the sun's heat.



Ultra Violet Waves (50 to 300 nanometres)

There are three types of ultra violet: UV-A, UV-B and UV-C. UV-A, causes skin aging, wrinkles and can also damage outdoor plastics and paint. UV-B is the most harmful to us and other life forms. UV-B causes sunburn and skin cancer and also reduces the growth of plants. UV-C, which is even stronger than UV-B, never reaches the earth's surface because it is filtered out by the atmosphere.

Visible Light Waves (400 to 700 nanometres)

We see visible light waves as the colours of the rainbow. Each colour has a different wavelength. Red has the longest wavelength and violet has the shortest wavelength. When all the waves are seen together, they make white light. Cones in our eyes are the receivers for these tiny visible light waves. The sun is a natural source for visible light waves and our eyes see the reflection of this sunlight off the objects around us.

Infra-red Waves (780 to 2500 nanometres)

Infra-red waves are thermal. In other words, we experience this type of radiation every day in the form of heat! The heat that we feel from sunlight is the sun's solar energy being transmitted by the infra-red waves.

How Cool-lite IR works

Current glazing systems generally cannot select between light and heat, allowing nearly the same amount of heat into a building as light. *Cool-lite IR* filters out 99% of the harmful ultra violet radiation and allows a high level of the

visible light spectrum to be transmitted into your building so colours appear brighter and clearer, while at the same time reflecting out a large percentage of the infra-red waves reducing heat so your building stays cooler.

Selectivity index

The ability of sheeting to select between light and heat can be measured by dividing the total visible light transmission by the total solar transmission, this is called the selectivity index. The chart below shows the difference in the selectivity index for the two grades of *Cool-lite IR* when compared to clear and opal sheet.

	Visible Light	Total Solar Transmission	Selectivity Index
Cool-lite IR IV	64%	50%	1.28
WonderGlas Clear	63%	63%	1.00
Cool-lite IR VIII	49%	36%	1.36
WonderGlas Opal	36%	40%	0.90

As you can see *Cool-lite IR IV* is 28% more selective than normal clear sheeting and *Cool-lite IR VIII* is 36% more selective than opal.

Cool-lite IR IV is recommended for factories and warehouses where a high level of light transmission is required and would be used instead of clear sheeting, whereas *Cool-lite IR VIII* is recommended for distribution and retail outlets where high heat levels are an issue and would replace opal sheeting.

Energy savings benefits

The shading co-efficient and heat transfer information listed below can be used when designing your building's heating/cooling requirements. *Cool-lite IR* can be coupled with Ampelite's Dual Roof twin skin systems which offer increases in insulation values and at the same time eliminate condensation.

	Solar Heat Gain Total Heat in (W/m ²)	Total Heat in (%)	Shading Coefficient
Cool-lite IR IV	419	53.58	0.64
Cool-lite IR VIII	316	40.40	0.46

Note 1. Solar heat gain (ASHRAE F27.17) is the total admission of incoming solar radiation, including heat, ultra-violet, visible and infra-red components (based on an average summer day solar radiation of 782 w/m²).

Note 2. The shading co-efficient is the ratio of solar heat gain of test sample to standard 3 mm thick glass.

Physical properties

Tensile strength	80MPA (min requirements 55 MPA)
Impact strength	8 Joules
Shear strength	90 MPA
Modules of elasticity	5500 MPA
Compressive strength	135 MPA
Flexural strength	150 MPA
Specific gravity	1.45
Thermal expansion	3.0 × 10 ⁻⁵ cm/C
Thermal conductivity	0158 watt/mC
Water absorption	.2% in 24 hrs/26C
Service temperature	range -20°C to +95°C

Spanning capacity for the following profiles

Series	1800/1.1mm	2400/1.4mm	3000/1.7mm
Corrugated	1000	1200	1300
5 Rib/Plumbdek	1200	1500	1700
Trimline	1200	1500	1700
SS900/Topspan	1600	1800	2000
Multispan/Maxispan	1600	1800	2000
LT7/ST7	1400	1700	1800
BB900/ST900/Ribline	1400	1700	1900
DD400/DD300	1200	1400	1600

Cool-lite IR is available to suit the commonly manufactured profiles in New Zealand and is manufactured to comply with AS/NZS4256.3-1994, part 2. *Cool-lite IR* is suitable for curved roof applications. Curved roof radius to suit 1800g/m² corrugated and 5 Rib minimum radius 3.8 m. 2400 g/m² corrugated and 5 Rib minimum radius 4.0 m.

Specification

The Translucent Sheeting shall be Ampelite *Cool-lite IR* (IV or VII) industrial quality sheeting, manufactured by Ampelite (NZ) Ltd, to comply with AS/NZS4256.3-1994, part 2. The gauge/weight of the sheet shall be ____ mm/gsm and shall be manufactured to conform with the nominated profile and colour. The sheeting shall be installed in accordance with Ampelite's fixing instructions, NZMRM Code of Practice and comply with NZS1562.3.

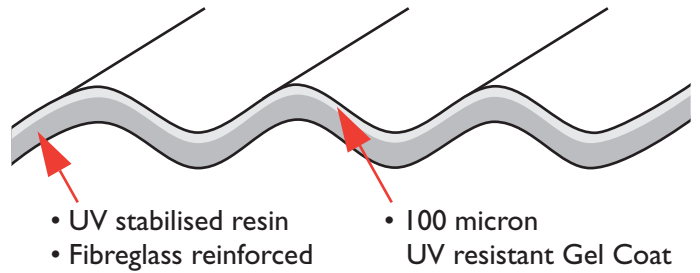
Cool-lite IR utilises the same highly UV resistant surface as Ampelite WonderGlas GC

Like our WonderGlas GC, *Cool-lite IR* is protected by the same highly UV resistant Silmar 996 gel coat which is integral with the sheet and cannot delaminate. WonderGlas GC was tested at Allunga Queensland, through the Allunga Exposure Laboratory. Allunga is an independent laboratory that specializes in natural weather testing, and is well known in Australasia and overseas. All methods of testing are performed to strict Australian Standards.

The Altrac system (in which the sample tracks the sun), is generally accepted to have a 5:1 weathering value. The WonderGlas GC result was a light loss of 22% over a period equivalent to 20 years exposure. The test product still displays a very smooth, glossy surface with no fibreshow at all. The WonderGlas GC technology was developed in the United States through BP Chemicals, and has been in the American market for in excess of 25 years and widely used throughout New Zealand since 1995.

As with WonderGlas GC, *Cool-lite IR* also permanently withstands weather, retards fading, maintains excellent light transmission and has higher resistance to a range of chemicals than standard fibreglass sheeting. In determining the cost effectiveness of *Cool-lite IR* over a term of 25 years or the life of the building, consideration must be given to the benefits. These include lower maintenance or replacement costs, the continuing benefit of excellent natural lighting with only minor deterioration over the product's lifetime, a lack of brittleness and high resistance to hailstones and finally, the sound weatherproofing of the building and its better appearance long after other materials have failed. It is estimated that commonly used surface film protected fibreglass sheeting can actually cost up to 300% more based on replacement of product at useful life intervals, at present day cost per square metre.

Gel coated premium grade



Cool-lite IR Warranty



Ampelite (NZ) Limited guarantees *Cool-lite IR* fibreglass sheeting (The Product) will:

1. Not suffer excessive yellowing and degradation to cause a light transmission loss of more than 30% from the original value when installed, for 25 years from installation.
2. Not delaminate, allow protrusion of the reinforcing fibres through the surface for a period of 25 years from installation.
3. Not permit water to penetrate right through the actual sheet for a period of 25 years from installation.

The guarantee is non-transferable and non-assignable without Ampelite's approval, and is subject to the following conditions:

- A. The Product must be stored and installed, strictly in accordance with Ampelite's recommendations, current at the time of installation.
- B. The Product must not at any time be exposed to temperature outside the range -20°C to +95°C.
- C. The Product must not be affected by failure to remove debris, keep the surface clean, or provide free drainage of water from The Product's surfaces.
- D. The Product must not be exposed to chemicals known to cause deterioration of polyester materials.
- E. The Product must not be damaged through acts of vandalism, fire or natural disasters or any other causes beyond Ampelite's control during transport, site storage or subsequent installation.
- F. The guarantee does not cover leakage through failure of the fastener seals, or through joins or holes.

On accepting this guarantee, the following terms are agreed to:

- Ampelite's liability in respect of failure of The Product under the guarantee is limited to repairing or replacing the affected sheets.
- Ampelite shall not be liable for any injury to persons or damage to property or for any consequential damage or loss of any kind from the use of The Product.
- This guarantee is given in lieu of all other conditions or guarantees expressed or implied, although nothing in this guarantee will affect a homeowners rights under the Consumer Guarantees Act.

Installation

The Product must be installed strictly in accordance with AS/NZS 1562.3:1996 (Design and Installation of Sheet Roofing and Wall Cladding Part 3, Plastic), and Ampelite's recommendations which are available on request.



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