

## Energy Star not Just a White Paint!



**Standard White** S.R.I. **100.11**  
Surface Temp at 37°C = **45°C**



**Energy Star White** S.R.I. **113.89**  
Surface Temp at 37°C = **40°C**

There is a great number coating products in the international market place that claim to provide a high level of Solar Reflectivity, but as both our Laboratories and consumers have found, many of them are no more than just white paint.

As a result, our technical support staff at Astec are constantly asked by consumers, “how can we tell the difference”, when they both look the same.

Apart from the mechanical properties of the products, the only true performance indicators to use during the selection of Solar Reflective paints are, *Emittance values*, %T.S.R. *Total Solar Reflectance* numbers and S.R.I. *Solar Reflectance Index* numbers. These numbers should be supplied by the coating manufacturer for their white and for all available colours in the product. In addition, all testing for the Solar Reflectivity should be done to international laboratory testing methods such as Australian Standards, American Standard Test Methods or Japanese Industrial Standards.

The use of %TSR and SRI numbers during the evaluation of different products makes the selection process simple. The higher the %TSR the higher the Solar Reflectance. The Higher the SRI the higher the Solar Reflectance in combination with the products emittance value.

Example:

A normal white paint has a Solar Reflectance Index of 99.00 where as an Energy Star White has Solar Reflectance Index's of 114.00.

The actual difference in surface temperature as a result of the difference in SRI values is provided below as calculations to ASTM E 1980-01 and the Spectral graph is for the same two whites tested to ASTM E-903.

## RESULT

5°C difference in surface temperature between standard white and Energy Star White

ASTM E1980-01 Solar Reflectance Index Calculator for Low-Slope Roofing			
Product Colour	<b>ENERGY STAR</b> <b>WHITE</b>		
Thermal emittance=	0.900		
TSR=	0.903		
Solar Absorbance=	0.097		
Convective coefficient=	Wind Condition		
	Low	Medium	High
	5	12	30
X=	0.072	0.072	0.071
SRI=	113.83	113.89	113.94
Standard solar conditions Solar Flux=1000 W/m <sup>2</sup> Ambient Air Temp=310K (37C) Ambient Sky Temp=300K (27C) No conductive heat transfer			
Low Slope Roofing Temperatures for above standard solar conditions			
Surface Temperature (K)=	314	313	311
Surface Temperature (C)=	41	40	38
Surface Temperature (F)=	106	103	100

ASTM E1980-01 Solar Reflectance Index Calculator for Low-Slope Roofing			
Product Colour	<b>STANDARD</b> <b>WHITE</b>		
Thermal emittance=	0.900		
TSR=	0.805		
Solar Absorbance=	0.195		
Convective coefficient=	Wind Condition		
	Low	Medium	High
	5	12	30
X=	0.172	0.171	0.170
SRI=	99.98	100.11	100.23
Standard solar conditions Solar Flux=1000 W/m <sup>2</sup> Ambient Air Temp=310K (37C) Ambient Sky Temp=300K (27C) No conductive heat transfer			
Low Slope Roofing Temperatures for above standard solar conditions			
Surface Temperature (K)=	322	318	314
Surface Temperature (C)=	49	45	41
Surface Temperature (F)=	120	112	105

