

PERFORMANCE DATA – InfraCOOL[®] MERINO vs Std Merino

KEY FACTS : HEAT REFLECTIVE COATINGS

- Due to their large surface area and exposure, Roof Surfaces can capture large amounts of the Sun's energy and thus COOL ROOFS offer potential energy savings.
- Dulux[®] InfraCOOL[®] Technology works by maximising the TOTAL SOLAR REFLECTION including the (invisible) infra-red portion of the Sun's energy which accounts for approx. 50% of the sun's total light energy.
- Various internationally accepted verification methods demonstrate the potential benefits of InfraCool[®] Technology in comparative testing vs comparable std colour and/or surface materials.

ASTM E1980-01 : SOLAR REFLECTANCE INDEX

The following comparative test data (based on constant solar conditions as defined) demonstrates the estimated surface temperature cooling benefit using Dulux[®] InfraCOOL[®] technology against the nominated system.

Total Solar Reflectance (TSR) and Thermal Emittance are measured and then used to estimate resultant Surface Temperature		Std Merino	Dulux [®] AcraTex [®] COOL ROOF Merino		
Total Solar Reflectance	ASTM C1549 (% TSR)	46 %	60.5%		
<i>Reflectance of light across the broad solar spectrum inc. visible (colour) and invisible InfraRed radiation</i>					
Thermal Emittance	ASTM C1371 (0-1 scale)	0.85	0.90		
<i>The ability of a material to release (ie. emit) captured heat energy. Higher number = Faster Heat release</i>					

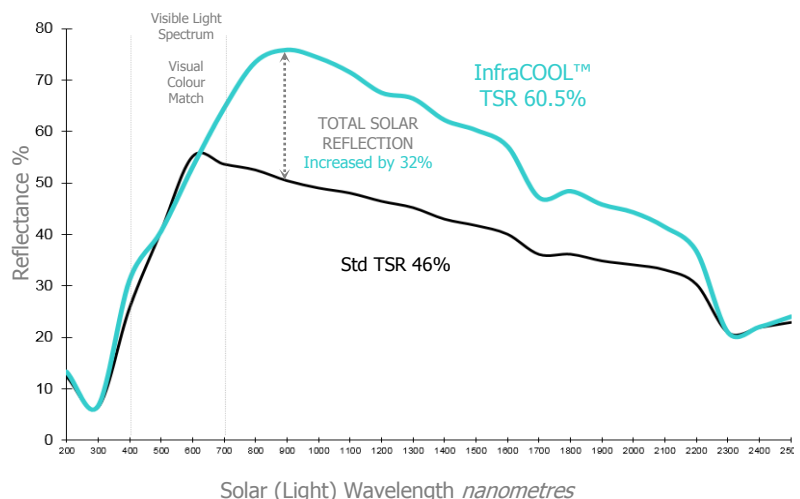
ASTM E1980 defines a mathematical equation for Calculating Solar Reflective Index and Estimating resultant Surface Temperature		Test Method defines reporting to 3 wind speeds : Low, Medium & High Medium wind conditions are most typically observed in Australia					
		Low	Medium	High	Low	Medium	High
Calculated Solar Reflectance Index	<i>relevant to wind conditions</i>	50.05	51.32	52.44	72.31	72.59	72.85
Estimated Surface Temperature	<i>Maximum relevant to wind conditions</i>	76	63	50	64	55	46
InfraCOOL[™] effect	<i>Maximum Potential surface temp. COOLING relevant to wind conditions</i>	Low Wind potential		Medium Wind potential		High Wind potential	
<i>Calculations based on constant conditions and 3 wind categories in accordance with ASTM E1980 Air temp (3°C), Solar flux (1000 W/m²), Wind Speeds Low, Medium, High corresponding to (5, 12, 30 W·m⁻²·K⁻¹) respectively.</i>		12 °C		8 °C		4 °C	

ASTM E903: SOLAR ABSORPTANCE :

Total Solar Reflectance (TSR) and Spectral Reflectance of 2 visually equal panels is measured at individual wavelengths from 200-2500 nanometers

Results:

- ❖ Matching reflectance (intersecting lines) in the visible light region confirm the colours are close visual matches.
- ❖ Significantly higher reflectance of InfraCool[®] across the infrared region (separation of the lines above 700 nm).
- ❖ TSR (Total Solar Reflectance) increased from 46% to 60.5% (32% increase) with InfraCool[®] Technology.



COLOUR CLASSIFICATIONS :

Solar Absorptance (SA)	
Std (SA)	InfraCOOL [®] (SA)
0.540	0.395

Building Code of Australia (BCA) Classification		
Criteria (SA)	STD rating	InfraCOOL [®] rating
Very Light : <0.4 Light : 0.4-0.60 Dark : >0.6	LIGHT	VERY LIGHT

NSW Building & Sustainability Index (BASIX) Classification		
Criteria (SA)	STD rating	InfraCOOL [®] rating
Light: <0.475 Medium: 0.475-0.70 Dark : >0.70	MEDIUM	LIGHT

InfraCOOL[®]...Colours that shield from the sun