

# COOLING

## OUR URBAN ENVIRONMENT

### KEY FEATURES

- Heat Reflective
- Complies with AS/NZS 4859.1
- Energy efficient., less CO<sub>2</sub>
- Very low absorptance
- Available in dark colours
- B.C.A. CodeMark Certified
- Certified by Good Environmental Choice Australia
- Water Based
- Low V.O.C.
- Highly Flexible
- Excellent Dirt Pickup Resistance
- High U.V. stability, 2800 hrs UVB testing, no chalking
- Suitable for rainwater collection (after 3 rains)
- Excellent water whitening resistance.
- Plasticizer free.
- Rapid Cure and Bond Strength
- Excellent resistance to alkali



(Technical Bulletin), apaa-2062

## Tileshield P.C.M Low Sheen

**An Infrared Heat Reflective Cement Tiled Roof Coating with Superior UV and Fade Resistance.**

### Description:

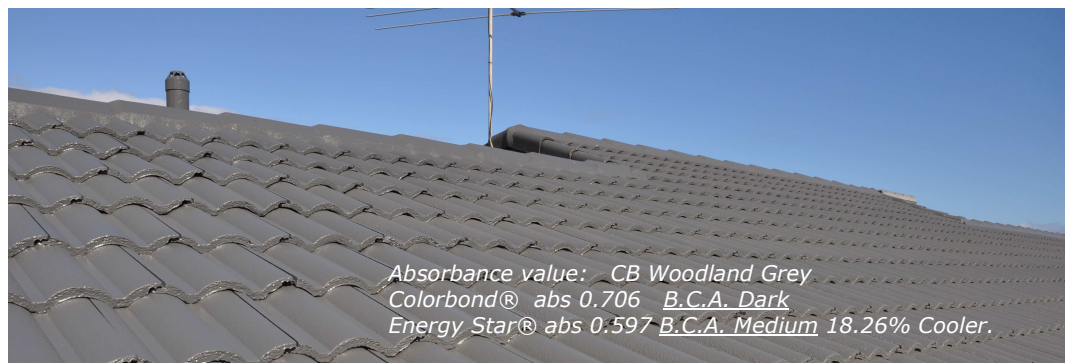
Tileshield PCM Low Sheen is a Heat Reflective cement tiled roof coating that reflects fully 50% of solar heat by infrared reflection. Even in darks colours, the products low solar absorbance and high emittance value will significantly reduce absorbed heat in the roof. The product is ultra-UV tough, fade resistant and will retain its rich depth of colour for the life of the paint. It is a smooth, nonabrasive finish that gives off a warm, subtle, and very natural glow and transforms a tiled roof into a cool and energy efficient roof with great street appeal.

The product is formulated with our exclusive Dirtguard Technology that delivers a new level of durability to the coating. It employs aerospace industry polycarbonate technologies to give molecular level protection against damage from UV light, water and environmental contaminants. Outstanding adhesion, flexibility and mould resistance is designed into the coating utilising over four decades of formulation experience with our harsh Australian conditions. It is highly abrasion resistant with a silky-smooth surface that is soft to the touch. Dirt, dust and contaminants wash away easily from its surface, maintaining that freshly painted look over long periods of time.

Your roof will be significantly cooler, tough and resilient to all weather conditions with an attractive finish that is guaranteed to outlast all other cement tiled roof coatings.

Tileshield PCM Low Sheen is an infrared heat reflective cement tiled roof coating that incorporates colour infused nano ceramics. This technology developed by Astec reflects heat by selective reflection of infrared light. The technology enables us to offer a dark-coloured roof coating that reflects fully 50% of Solar energy with solar reflectance values of up to 58% higher than standard coatings of the same colour. As an example, standard slate grey has a Total Solar Reflectance, (T.S.R.), value of 16.6% compared with Energy Star Slate Grey that has a T.S.R of 40.30%, (58% higher reflectance).

### Where to use:



### Confidence for Certifiers, Builders and Architects

Astec Energy Star products are the first, and only range of thermally regulated roofing finishes, texture coatings and elastomeric deck and wall membranes to be CodeMark certified and approved for guaranteed compliance with the B.C.A. Section J – Energy Efficiency Guidelines.



# Tileshield PCM



## Description cont:

Tileshield PCM Low Sheen will reduce surface temperatures of the cement tiled roof by as much as 50% during the extremes of summer, reducing internal building temperatures and air conditioning running times while creating a more comfortable living space in the home.

Tileshield PCM Low Sheen is a low odour formulation and contains no harmful solvents making it environmentally friendly and safe for applicators during application.

The product is designed on an internally plasticized acrylic technology, which means, it does not contain plasticizers that can leach from the cured film over time and detract from the product's long-term elasticity.

Tileshield PCM Low Sheen is highly water resistant, has excellent flexibility and its adhesion is promoted, providing a strong bond to the substrate.

The cured film is tough, highly flexible, and because it remains cool, testing has shown that it will retain its mechanical properties up to four times longer than all conventional cement tiled roof coatings.

## Infrared Heat Reflective:

A coating doesn't have to be white to be cool.....! As an Architect, Builder or Homeowner, rich, dark colour is an important part of your building design and decoration. Unfortunately, dark colours soak up the sun and get hotter and hotter as the day progresses. As a result, building temperature and power consumption are increased, and greater demand is placed on our environment and global resources.

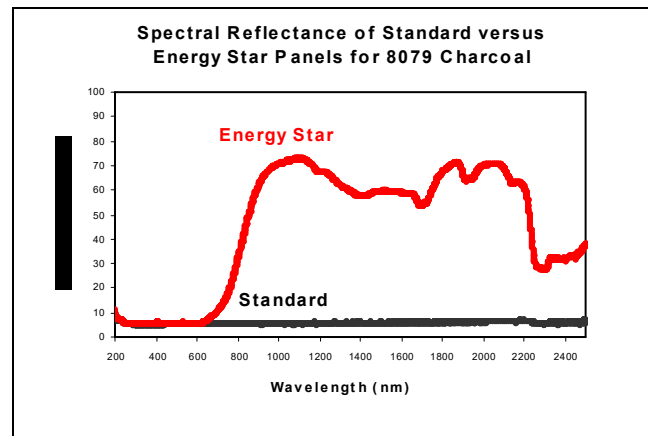
The comparative data represented on the graph above is actual spectral results printed during tests conducted to ASTM E-903 on a Lambda 9000 Solar Reflectometer. The graph shows the difference in heat reflection between a standard charcoal roofing paint and Energy Star Charcoal. Solar reflectance values for the Energy Star are 58% higher than the standard coatings of the same colour.

Energy Star® coatings are sustainable Energy Efficient solutions for roofs and walls that significantly reduce absorbed heat in the building envelope.

The use of Energy Star® systems during restoration or new construction results in energy cost savings, cooler occupancy zones and reduced Co2 emissions.

## Durability:

Heat and moisture are the two main contributing factors that accelerate the degradation of exterior coatings. In highly humid, tropical environments, conventional acrylics have been known to last as little as three years. In Australia, some dark-coloured roofing can start to change colour and fade from its original depth of colour within 3 years.



Energy Star coatings have increased durability and life expectancy compared with conventional paints. Independent laboratory testing to ASTM Standards confirmed Solar Reflectance Indices of 241% greater than normal paints on a dark colour like Slate Grey.

Heat generated by Solar Radiation from the sun is one major contributing factor to exterior coating degradation, especially in a standard dark colour.

Tileshield PCM Low Sheen remains cool. After exposure to 2800hrs of UVB 313/Moisture testing, in accordance with ASTM G53-96, the gloss, depth of colour, adhesion and film integrity remained un-changed. This provides a performance increase of more than 400% when compared to a standard roofing acrylic. Quite simply, the less heat on the coating the longer they last.

Moisture is the second major contributing factor to exterior coating degradation, especially in water based acrylic coatings. Atmospheric moisture enters the coating film on a daily basis and swells the coating, greatly reducing its life.

Our propriety Dirtguard polycarbonate technology and specialty silicones used in Tileshield PCM Low Sheen prevent the entry of moisture into the coating film. With water transmission resistance testing in accordance with AS/NZS 4548.5-1999 results at <1 g/24h/m<sup>2</sup>/kPa.

As a result, the coating does not swell and can last 400% longer than standard roofing acrylics. Simply put, the less moisture that the coating film has to tolerate, the longer it will last.

High Solar Reflectivity, excellent resistance to water and strong mechanical performance all contribute to Tileshield PCM Low Sheen being one of the most advanced and functional cement tiled roof coatings in Australia.

# Tileshield PCM



## Principal Use:

Correctly prepared cement tiles.

## Available Colours:

Full range from light to dark accents.

## Surface Preparation

### Cleaning

1. All surfaces must be clean, dry, structurally sound and correctly sealed prior to any topcoat application.
2. Ensure down-pipes to rain-water tanks and storm water are disconnected before cleaning.
3. The surface should be high pressure water cleaned to remove the moss, lichen and chalky surface, ensuring that all mould deposits are removed from the leading edge and shoulders of the tiles. The most suitable nozzle to achieve the best results on concrete tiles is a Kranze Turbo Nozzle. Any deposits of grease, oil or silicone must be removed.
4. Structural defects to areas such as the ridge capping should be correctly repaired by re-bedding or re-pointing, any defective tiles should be replaced.

### Mould Treatment

- Apply one coat of Astec Barrier to the entire roof surface with a low-pressure backpack, or airless spray unit. When applying Barrier, you need only to dampen the surface ensuring efforts are made to contact all shoulders and edges of the tiles. Astec Barrier will effectively retard any dormant mould spores in the substrate that can cause under film mould spoilage, Barrier is an extremely low-cost solution that adds years of service free life to concrete roof restoration.

### Sealing

- The pressure cleaned surface of the tile should be checked for surface integrity before the selection of the correct sealer.
- If the surface is clean, but when rubbed continues to produce a powder on your finger. It means that the original factory finish has weathered to a point where it is under-bound. This is most common with Monier roofing tiles and needs to be re-bound to ensure top-coat adhesion.
- Powdery surfaces require the application of one coat of Astec Multi-Seal. Multi-Seal has an exceptionally low surface tension and will penetrate and bind the chalky surface prior to top-coating. Apply one coat of Astec Multi-Seal at a coverage rate of no more than 6 m<sup>2</sup> per litre.
- Surfaces that do not produce a powder when rubbed are seen as normal and should be sealed with one coat of Astec Tile Sealer. Apply one coat of Astec Tile Sealer at a coverage rate of no more than 6 m<sup>2</sup> per liter.
- Apply one full, wet coat of Astec Cap Seal to any fresh mortar repairs. Cap Seal is highly resistant to alkali attack from green mortar, and when applied to fresh cement, protects the topcoats from lime burn and leaching salts. It is imperative that Cap Seal is used under Tileshield on fresh mortar repairs to eliminate any chance of unsightly top-coat white out.
- If Unsure, Contact Astec for the correct preparation technique, sealers, primers and undercoats before proceeding.

### Specification for Aged Cement Tiled Roofing

Refer Astec a-Spec No. APA 2062

# Tileshield PCM



## Application Data

### Application

1. Stir well before use with a flat paddle or with a metal paint wacker using an up and down scooping action.
2. Apply one full wet coat of Tileshield PCM Low Sheen, to the entire roof surface. (Coverage rate not to exceed 5m<sup>2</sup> per liter). WFT 200 microns.
3. Apply a second full wet coat of Tileshield straight from the drum at a coverage rate of no more than 5m<sup>2</sup> per liter. WFT 200 microns.
4. The above coverage rates include average substrate profile area for concrete tiles.
5. For airless spray applications use a 518 to 523 tip.
6. Do not apply to surfaces that have had wax or silicone-based materials previously applied. Do not apply when ambient temperature is below 10°C, above 35°C or when humidity is extremely high.

### Limitations

Tileshield PCM Low Sheen is a water-based material, therefore should not be applied during inclement weather or when precipitation or freezing are imminent.

### Pack Sizes

1 Ltr / 4 Ltr / 10 Ltr / 15 Ltr / 20 Ltr

## Paint Disposal

Do not pour left over paint down the drain. Brush any leftover paint onto newspaper and allow to dry in a well-ventilated area. Dispose of the dry paint via domestic waste disposal. Empty cans should be left open and allowed to dry then disposed of in accordance with your local recycling legislations.

## Safety Direction

Keep out of reach of children, provide adequate ventilation during use and do not dispose of left-over paint in any drainage systems.

## First Aid

### Eye Contact

Irrigate continuously with water for fifteen minutes holding eyelids open. Seek Medical advice.

### Swallowed

Contact a doctor or Poisons Information Centre immediately. Do not induce vomiting. Give a glass of water. If vomiting does occur, place victim's face downwards at low level to prevent vomit entering lungs. Contact Astec for the relevant Material Safety Data Sheet.

# Tileshield PCM



S.R.I. <i>Solar Reflectance Index</i> (White) to ASTM E 1980-01	113.89 (Medium wind conditions)
%T.S.R. <i>Total Solar Reflectance</i> (White) to ASTM C1549-02	90.03
Emittance to ASTM C-1371	0.90
%T.S.R. 44 standard colours	See test reports or exterior colour card
S.R.I. 44 standard colours	See test reports or exterior colour card
Gloss level	6.8% @ 60 deg
Drying Time at 25°C @ 100 MIC W.F.T.	45 min dry and block resistant
Recommended thinners	Water / Thinning not recommended.
Wash up	Water
Recoat time at 25°C	1 to 2 hrs
Theoretical spread rate at D.F.T (30 microns Dry)	16.00 m <sup>2</sup> per ltr
Spread rate at recommended D.F.T (180 D.F.T.)	2.5 m <sup>2</sup> per ltr, (Including 2 coats and tile profile)
Specific Gravity.	1.222
Volume Solids.	42% V/V
P.V.C.	24% V/V
V.O.C	<50 gl

## Physical resistance properties compared to a premium acrylic:

<b><u>TEST DESCRIPTION</u></b>	<b><u>Competitor Acrylic</u></b>	<b><u>Tileshield PCM Low Sheen.</u></b>
1 Boiling Water Test	Fail Severe whitening	Pass – 0.5
2 Water Resistance		
-Blistering	Dense poor 8	Sparse good 0.5
-Whitening	DL + 4.88 (Whitening did not recover)	-0.015
3 Crosshatch Adhesion	OB,c	OB,c
4 Accelerated Weathering (ASTM G53-96) 2800 hrs	Moderate chalking and surface whitening.	Excellent gloss retention with little to no surface change. >97% gloss retained.

# Tileshield PCM



## Test Procedures:

### Boiling Water Test

Place 24hr old test panel into boiling water for 30 minutes. Removed and dried panel then noted blistering and adhesion loss.

### Water Resistance Test

Placed 24hr old test panels into lab temperature water, 25 deg C, for 48 hrs. Remove, dry and measure for water whitening and blisters.

### Accelerated Weathering

#### ASTM G53-96

2800hrs of UVB 313 Lamps/Moisture testing, in accordance with ASTM G53-96. Sample were exposed to four-hour cycles of U.V.B. at an irradiance of 1.05 then moisture at 60 deg C for a total period of 2800 hrs.

### Cross Hatch Adhesion Test

A test panel has lines scribed through the coating to the substrate at 3mm intervals in a crosshatch pattern. Adhesive tape is applied and remove noting any failure.

Rating:-	OB	=	90% squares removed.
	C	=	Cohesive substrate failure.

## Warranty:

The technical data furnished herein is based upon data believed by Astec Paints to be true and accurate at the time of writing, however, no guarantee of accuracy is given or implied and is subject to change without notice. This information is given in good faith for the assistance of users. No legal warranty expressed or implied is made as to its accuracy, completeness or otherwise. Every person dealing with this material herein does so at their own risk absolutely and must make independent determinations of suitability and completeness from all sources to ensure their proper use. We have no control over the condition under which these products are stored, handled or used; therefore our recommendations must not be regarded as a mounting to legal warranty or as involving any liability on us.



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