

# COOLING

## OUR URBAN ENVIRONMENT

### KEY FEATURES

- Heat Reflective
- Complies with AS/NZS 4859.1
- Energy efficient., less CO2
- 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-2067

## Metalflex P.C.M Gloss

An Infrared Heat Reflective Metal Roofing Coating with Superior UV and Fade Resistance.

### Description:

Metalflex PCM Gloss is a Heat Reflective metal 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 metal 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 contaminates 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 factory coated metal roofing sheet.

Metalflex PCM Gloss is an infrared heat reflective metal 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.



## Metalflex PCM



### Description cont:

Metalflex PCM Gloss will reduce surface temperatures of the metal 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.

Metalflex PCM Gloss 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.

Metalflex PCM Gloss is highly water resistant, has excellent flexibility and is adhesion 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 metal 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.

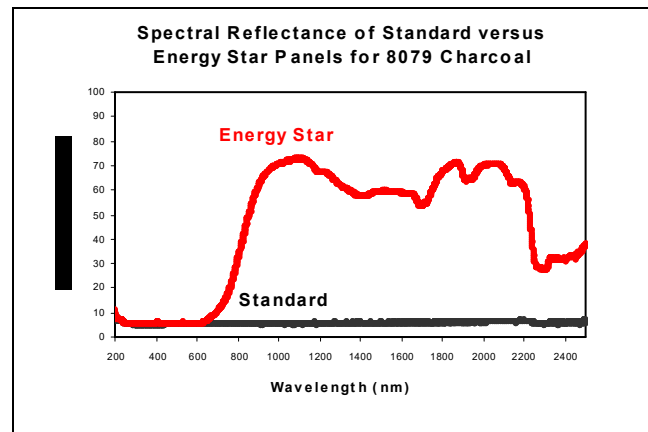
The comparative data represented on the graph above is actual spectral results printed during tests conducted to ASTM E-903 on a Lambda 9000 Solar Reflectometer. The graph shows the difference in heat reflection between a standard charcoal roofing paint and Energy Star Charcoal. Solar reflectance values 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 metal roofing can start to change colour and fade from it's 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.

Metalflex PCM Gloss 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 Metalflex PCM Gloss 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 Metalflex PCM Gloss being one of the most advanced and functional metal roof coatings in Australia.

# Metalflex PCM



## Principal Use:

Correctly prepared galvanised metal roofing and faded factory finish metal roofing sheet.

## Available Colours:

Full range from light to dark accents.

## Surface Preparation

All surfaces must be clean dry and free of contaminants. Remove dirt, dust and any grease with a household detergent. Scrape of any loose or flaking paint on existing painted surfaces then sand any remaining paint to a flat finish. Any existing paint that exhibits a complete lack of adhesion should be entirely removed for the best results. Wipe down with a damp cloth to remove any dust. Where it is not possible to completely remove all chalk or contaminants from the surface, apply Astec Multi-seal, which will bind the surface to a hard finish prior to painting. Rusted surfaces or nail heads should be treated with Astec Rus-traint then spot primed with Astec B-16 IR Grey Anti-corrosive primer.

### New Galvanised Iron or Colorbond steel

Wipe clean and remove any grease with Astec Enviro-clean. Apply one very thin coat of Energy Star B-16 IR Grey or AC3 Anti-corrosive primer.

### Aged Corroded Galvanised Iron or Colorbond

Remove any excessive rust with a scraper, wire brush or by sanding. Wipe clean and remove any grease with Astec Enviroclean. Apply Astec Rus-traint to application details on its can. Apply one coat Energy Star B-16 IR Grey or AC3 Anti-corrosive primer.

### Mould Infested Areas

Wash down using a stiff brush with (Chlorine) or a household bleach and water to remove the mould. Apply one coat Astec Barrier.

### Aged Metal Roofing Specifications

Refer Astec a-Spec No. APA 2046 / APA 2053 / APA 2057

## Application Data

### Application

Stir well before use with a flat paddle or with a metal paint wacker using an up and down scooping action. Apply two coats Metalflex PCM Gloss with a good quality synthetic brush or new unused 10 to 12 mm synthetic roller cover. For airless spray applications use a 518 to 523 tip. NOTE: the number of coats required to achieve full cover will depend of the primers and sealers used during preparation, application technique and/or the underlying substrate colour. 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 very high.

### Limitations

Metalflex PCM Gloss 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.

# Metaflex PCM



## Product Data:

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	78% @ 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 metal profile)
Specific Gravity.	1.222
Volume Solids.	38% V/V
P.V.C.	18% 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>Metaflex PCM Gloss.</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.

# Metaflex 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.

**In a climate dominated by heat, it makes sense to provide exterior finishes that are highly reflective to sunlight.**

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