

THERMATECH®

Designed for Visionaries,  
Built for Nature.

*clean*

Colorbond®

Takes the shape of your  
**IMAGINATION**



# Clean COLORBOND<sup>®</sup> steel

Takes your architectural dreams to the skies.

The development of Clean COLORBOND<sup>®</sup> steel with Thermatech<sup>®</sup> reflects BlueScope Steel's enduring qualities - innovative, superior, cutting-edge and trend leading. With our Thermatech<sup>®</sup> solar reflectance technology, we are helping to create a future that is comfortable not just for people, but for the environment too. Combined with Clean COLORBOND<sup>®</sup> steel's renowned durability, colour retention and flexibility, you now have the power to shape the landscape to suit both your architectural vision and conscience.

Climate control starts here



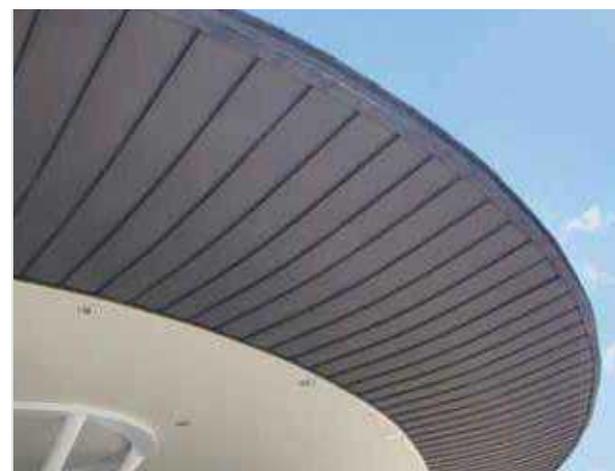
# What is Thermatech<sup>®</sup> solar reflectance technology?



- Thermatech<sup>®</sup> solar reflectance technology is incorporated into Clean COLORBOND<sup>®</sup> Ssteel to lower surface temperature by absorbing less heat from the sun. In other words, Thermatech<sup>®</sup> is able to increase the Solar Reflectance Index (SRI) of a roofing material.
- SRI is a numerical number of a constructed surface's ability to reflect solar heat. A standard black is 0 and a standard white is 100. Higher SRI values indicate a roof whose surface temperature is lower. The SRI is mostly a function of solar reflectance. A building material with a high solar reflectance will probably also have a high SRI.
- Thermatech<sup>®</sup> technology optimizes the thermal performance of every colour in the standard Clean COLORBOND<sup>®</sup> Ssteel without changing their appearance and provides greater thermal comfort all-year round, whilst using less energy for air-conditioning and helps to mitigate the Urban Heat Island (UHI) effect.

## Why is Thermatech<sup>®</sup> such an important advance?

- Roofing is a key consideration when designing any home or workspace to be thermally efficient, and is essential in mitigating the Urban Heat Island (UHI) effect.
- An increasing number of very hot days plus media and government focus on climate change have directed community attention to the need for greater thermal efficiency and the fact that we live in a harsh climate.
- Green building rating tools such as Leadership in Energy and Environment Design (LEED) encourage materials with high SRI values for mitigating the UHI effect. Clean COLORBOND<sup>®</sup> steel with Thermatech<sup>®</sup> is able to provide higher SRI values thus potentially contributing up to 1 point in green building requirements.
- COLORBOND<sup>®</sup> steel has been one of ASEAN's favourite building materials for more than 40 years. Today, Clean COLORBOND<sup>®</sup> steel with Thermatech<sup>®</sup> is keeping pace with the needs and concerns of architects, builders, developers and their customers.



# More of everything people love about Clean COLORBOND® steel

- Elegance, colour, design versatility, lightweight strength and durability are just some of the features that have made Clean COLORBOND® steel a favourite with architects, developers, builders, designers and the public alike.
- Now, with the inclusion of Thermatech® solar reflectance technology, Clean COLORBOND® steel gives the building industry even more of what it wants. A wider choice of thermally efficient colours and even greater durability because of reduced heat stress on the entire roofing system.
- Corrosion resistance performance of pre-painted steel can be influenced by coating class. Clean COLORBOND® steel with AZ150 coating class is able to provide stronger and durable resistance against corrosion as compared to conventional pre-painted steel. Research has shown that the AZ150 coating class is able to provide up to 4X of additional lifespan as compared to the conventional galvanized coating class.
- Clean COLORBOND® steel is backed by BlueScope Steel's material warranty\*

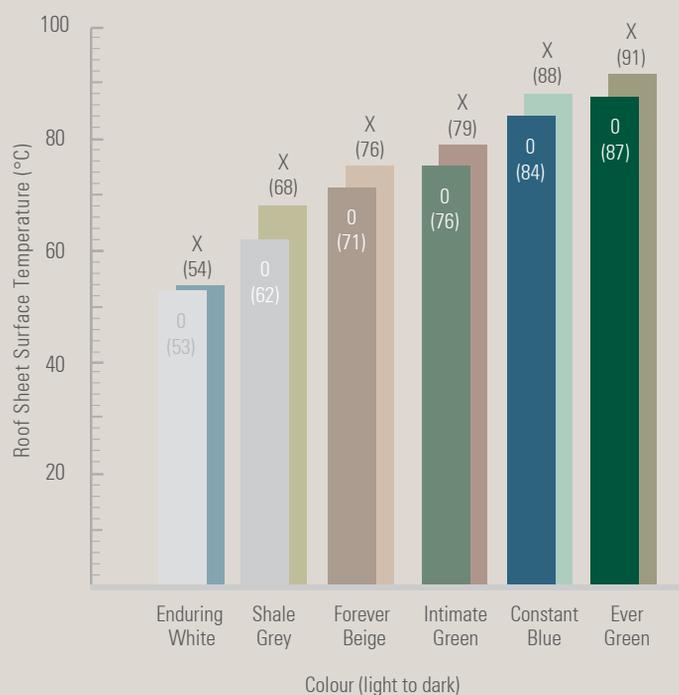
\* Warranty terms and conditions apply



## Cooler in hot weather, using less energy

- Thermatech® solar reflectance technology acts like added insulation in hot weather, making it easier for air-conditioning to keep buildings cool.
- In moderate to hot climates, compared to roofing material of similar colour with lower solar reflectance, Clean COLORBOND® steel can reduce annual cooling energy consumption by up to 15%\*.
  - \* Depending on level of insulation, colour, building shape and function.
- Clean COLORBOND® steel with Thermatech® technology reduces peak roof temperature by up to 6°C\*, depending on the colour.
  - \* Depending on colour, level of insulation, building shape and function.
- Greater comfort with the use of less energy is a breath of fresh air for a growing awareness of climate change and thermal efficiency.

Comparison of roof sheet temperatures (insulated\*):



# Year-round climate control

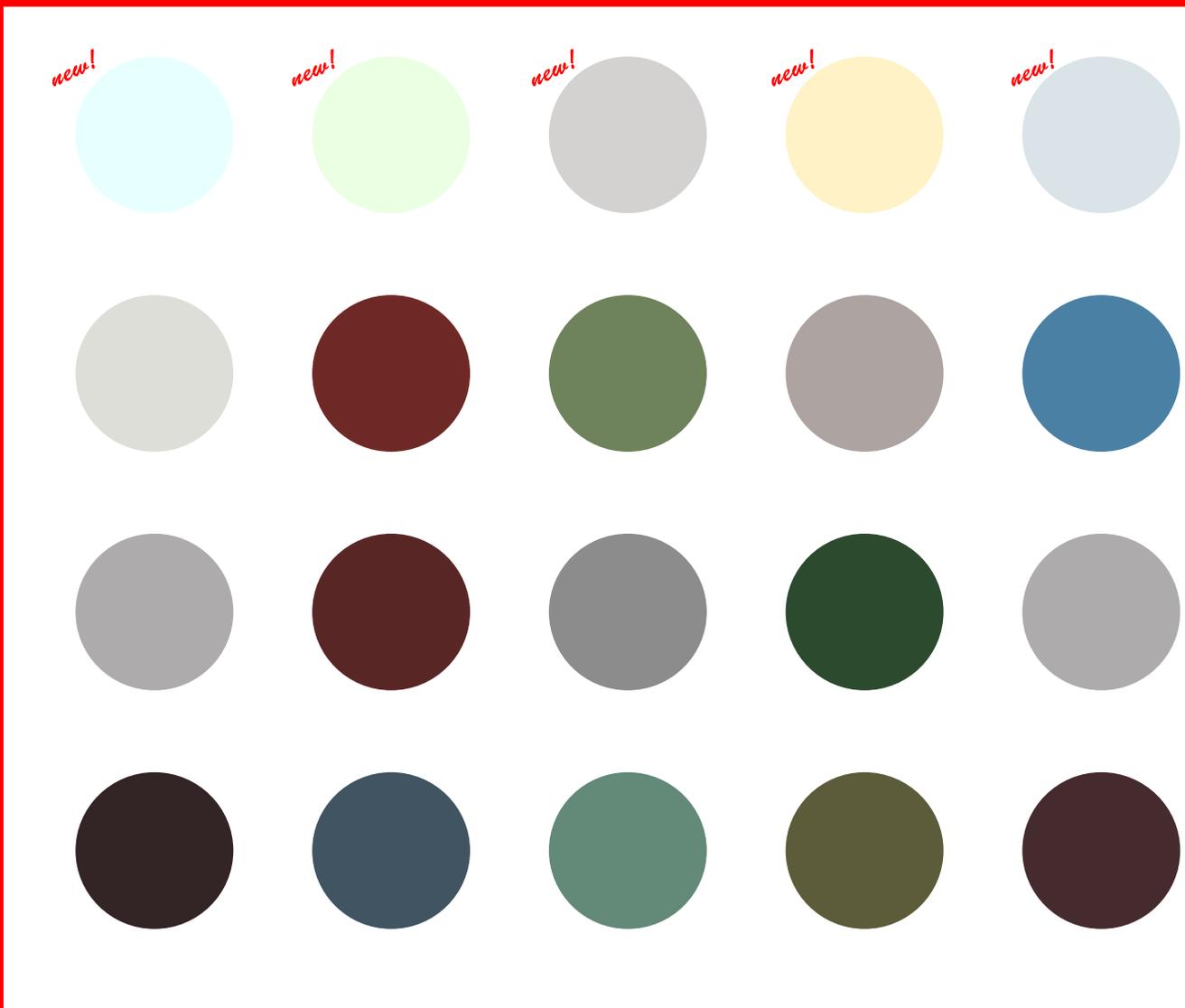
Designing and building homes to be comfortable all year round can be a challenge with many considerations, including aspect, cross-ventilation, insulation, climate and more.

Clean COLORBOND® steel roof not only reduces the amount of solar radiation absorbed, but is also very effective at re-radiating heat. With the addition of Thermatech® solar reflectance technology, darker coloured Clean COLORBOND® steel products also absorb less energy, creating the same advantages of a cooler roof and a cooler building.

Thermal comfort is maintained by the dirt resistance property in Clean COLORBOND® steel. The solar reflectance of roofing sheets will be influenced by the amount of dirt staining. Therefore retaining a clean appearance is very important for maximizing the cooling effect of roofing sheets.

## Clean COLORBOND® colour chart

Offering you a vibrant selection to match your most prestigious designs.



The Clean COLORBOND® steel colours shown in the leaflet have been reproduced to represent actual product colours as accurately as possible. However, we recommend you check the chosen colour against actual samples of the product before purchasing as varying light conditions and limitations of the printing process affect colour tones.

# Why Clean COLORBOND® steel from BlueScope Steel?

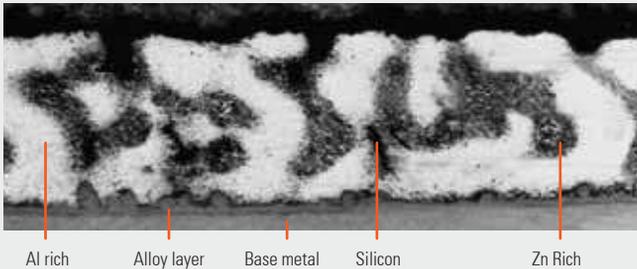
## How confident are you of being offered an equivalent product?

Clean COLORBOND® steel combines the superior strength of zinc / aluminium alloy-coated steel with proprietary paint system technology exclusive to BlueScope Steel. Clean COLORBOND® steel undergoes continuous research and development, with stringent product testing in the harshest environments.

Clean COLORBOND® steel complies with Australian/  
New Zealand Standard AS/NZS 2728.

# What is corrosion?

Corrosion is caused by the deterioration of metal due to chemical reaction as a result of exposure to the environment (water and oxygen). It is also known as oxidation. Corrosion of metal results in the formation of rust or oxides in the corroded area.



## ZN/AL COATING TECHNOLOGY

Clean COLORBOND® steel is incorporated with BlueScope Steel's proprietary metallic coating technology - ZINCALUME® zinc / aluminium alloy coated steel as the base substrate. ZINCALUME® steel comprises a coating composition of 43.5% zinc, 55.0% aluminium and 1.5% silicon. The minimum coating mass of 150 g/m<sup>2</sup> (AZ150) offers superior corrosion performance under varied conditions, when compared with other metallic coated steel.

## HOW DOES IT PERFORM?

The pictured samples were exposed for the same period of time under a similar severe environment. The galvanised steel shows severe loss of coating and consequent red rusting of the steel substrate but the ZINCALUME® steel is still in good condition.



ZINCALUME® steel



Galvanized steel



Bellambi Point site, Australia

Corrosion rates of galvanized steel and 55% Al-Zn alloy coated steel at Australian Atmosphere Exposure Test Sites.

Site	Galvanized Steel		55%Al-Zn Alloy Coated Steel	
	g/m <sup>2</sup> /y	um/y	g/m <sup>2</sup> /y	um/y
Severe Marine	140	9.8	16	2.2
Marine	18	1.3	4.0	0.54
Industrial/Marine	20	1.4	4.2	0.57
Rural	4	0.28	1.3	0.17

g/m<sup>2</sup> - two sided      um - one side



Figure A - Microscopic view of galvanized steel

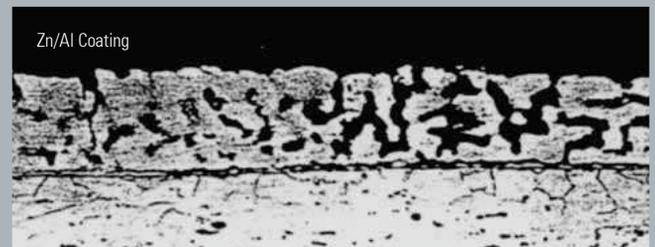


Figure B - Microscopic view of ZINCALUME® steel

## HOW DOES IT WORK?

Sacrificial protection is provided by an active metal (e.g. zinc), protecting a less active metal (e.g. steel). The more active metal corrodes in preference to the less active metal (figure A). ZINCALUME® steel exhibits a more complex coating structure consisting of both zinc-rich and aluminium-rich areas (figure B). The zinc-rich area provides excellent sacrificial protection, while the aluminium-rich area provides durable barrier protection. It is the combination of these two characteristics that make ZINCALUME® steel durable and effective against corrosion.

## Key notes:

- Corrosion is dissolution of metal due to the surrounding environment.
- Clean COLORBOND® steel provides excellent corrosion resistance with ZINCALUME® steel as the base substrate which comprises a coating composition of 43.5% zinc, 55.0% aluminium and 1.5% silicon with a minimum coating mass of 150 g/m<sup>2</sup>.
- The zinc-rich area provides excellent sacrificial protection, while the aluminium-rich area provides durable barrier protection.

## CROSS-SECTION OF CLEAN COLORBOND® STEEL



# What is paint weathering?

– colour fading and delamination?

Delamination and colour fading

Colour fading is caused by the degradation of the key ingredients in the paint system, e.g. pigments and resins, which is due to prolonged weathering and poor formulation. Delamination is the separation of the top coat from the primer and can be caused by UV effects, poor surface preparation, poor paint formulation, or poor paint / primer specification.



## PAINT SYSTEM

BlueScope Steel utilises optimum paint formulation and pigment blends to provide excellent long-term colour stability for Clean COLORBOND® steel products.

The proprietary paint system is a result of extensive R&D testing, including actual field exposure testing. It has been proven that the paint system used for Clean COLORBOND® steel provides superior durability against weathering and UV penetration, when compared with other pre-painted steel.

First, an effective metallic coating is prepared and a corrosion inhibitive primer is applied for adhesion of the top coat on the substrate and to provide additional corrosion resistance. This is followed by application of the paint top coat with optimum paint thickness to maximize the paint performance against weathering. The multiple coating system layers act in synergy to provide superior performance and durability.

Clean COLORBOND® steel now incorporates Thermatech® technology to provide thermal protection for houses and commercial buildings.

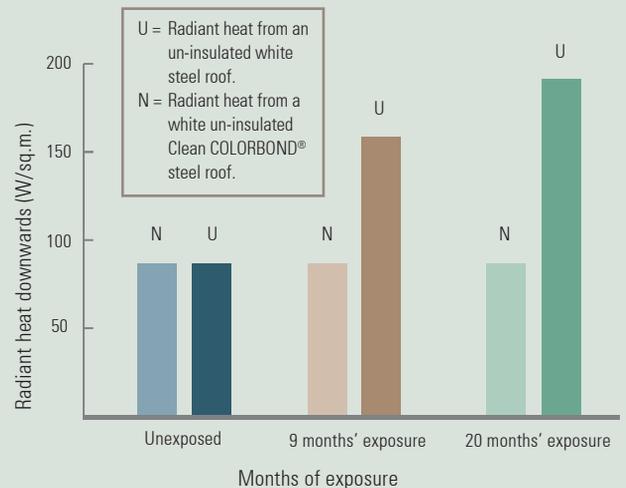
## HOW DOES IT WORK?

The paint system used in the manufacturing of Clean COLORBOND® steel has a high degree of resin stability, colour stability and UV resistance. The effectiveness of a paint system's performance is a function of the multiple layers of coating technology working together to create an effective overall coating.

Thermatech® solar reflectance technology is able to lower the surface temperature by absorbing less heat from the sun as illustrated below:



Comparison of heat radiation levels into a building interior after weathering:



Dirt resistance also assists in maximizing the cooling effect of roofing sheets.

## Key notes:

- Colour fading is caused by deterioration of resin and pigment while paint delamination is caused by UV effects, poor manufacturing, poor formulation, or poor specification.
- BlueScope Steel's paint formulation provides superior durability against weathering and is resistant to paint delamination.
- Clean COLORBOND® steel is made up of multiple coating layers that work in synergy to provide superior performance and durability.
- Thermatech® solar reflectance technology is incorporated into Clean COLORBOND® steel to reflect the sun's heat, thus lowering surface temperature.

Figure A

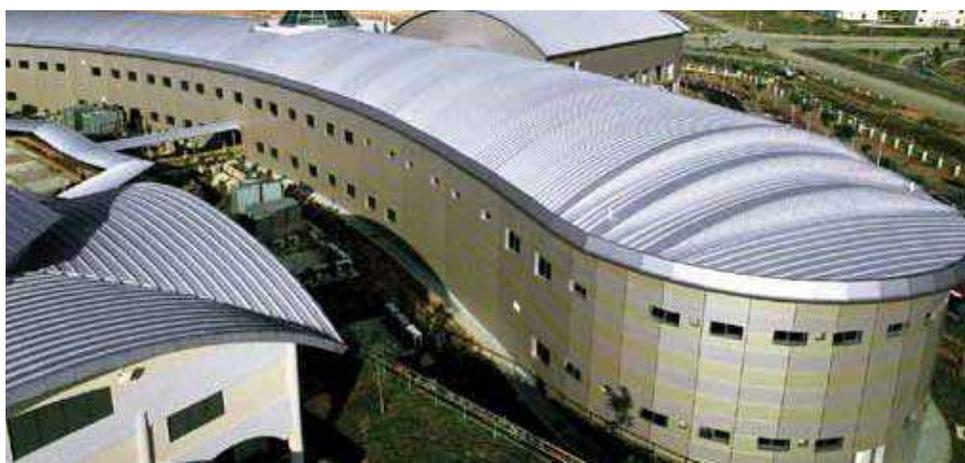


## HOW DOES IT PERFORM?

The samples pictured were exposed to the same environmental condition for the same period of time. The conventional pre-painted steel shows significant colour fading, while the Clean COLORBOND® steel shows very little colour change, thus providing long lasting beauty (figure A).

## Benefits of Clean COLORBOND® steel, only from Bluescope Steel

- Higher corrosion resistance with ZINCALUME® AZ150 coated steel substrate
- Thermatech® technology incorporated into paint system to reflect sun's heat, thus cooler surface temperature
- Wide colour range
- Advanced primer technology to resist paint delamination
- Clean technology to prevent tropical staining
- Guaranteed material strength
- BlueScope Steel material warranty\*
- Proven customer and in-field response and support
- Nationwide availability and support



\* Warranty terms and conditions apply

# What is tropical staining?

## DIRT STAINING

Dirt staining is caused by a combination of airborne particles, heat and humidity. On conventional pre-painted steel, airborne particles like dirt settle on the pre-painted steel surface. The combination of heat and humidity then results in dirt particles bonding to the pre-painted steel surface. This eventually forms dark stains on the building material. Over time, the building will look dirty and aged.

## CLEAN TECHNOLOGY

BlueScope Steel developed a revolutionary paint system, which resists dirt staining. The unique Clean COLORBOND® steel paint system prevents dirt from bonding to the surface of Clean COLORBOND® steel (figure A), as compared to other pre-painted steel paint systems where dirt particles can bond to the surface (figure B).



Figure A  
Microscopic picture shows dirt not bonding to the surface of Clean COLORBOND® steel.



Figure B  
Microscopic picture shows dirt bonding to the surface of conventional pre-painted steel.

## HOW DOES IT WORK?

Because Clean COLORBOND® steel resists dirt bonding on the surface, any dirt particles residing on the surface remain “loose” and can be easily washed away during rainfall. Clean COLORBOND® steel therefore resists dirt staining and maintains a cleaner look over time.



## HOW DOES IT PERFORM?

The samples pictured were exposed under the same tropical environment for the same period of time. The conventional pre-painted steel was badly affected by dirt staining, while the Clean COLORBOND® steel shows no signs of staining and retains its vibrant and beautiful colour.



Conventional pre-painted steel

Clean COLORBOND® steel



Conventional pre-painted steel

Clean COLORBOND® steel

## Key notes:

- Heat and humidity cause dirt particles to bond to the pre-painted coated steel surface.
- Clean COLORBOND® steel's unique paint system prevents dirt from bonding to the pre-painted coated steel surface.
- Dirt that resides on Clean COLORBOND® steel remains “loose” and can be easily washed off during rainfall.
- Clean COLORBOND® steel retains its vibrant and beautiful colour.



## How to identify genuine Clean COLORBOND® steel, only from Bluescope Steel

To identify genuine Clean COLORBOND® steel made only by BlueScope Steel, pay attention to the Clean COLORBOND® steel branding text on every coil. The brand presence is your assurance of BlueScope Steel's commitment to quality.

The quality assurance and warranty\* offered by BlueScope Steel:

- Guaranteed minimum yield strength of 300 MPa for G300 and 550 MPa for G550
- Minimum coating mass of 150g/m<sup>2</sup> by triple spot test
- Warranty\* against corrosion perforation.



T+62 21 5785 4150

F +62 21 5785 4151

**[www.bluescopesteel.co.id](http://www.bluescopesteel.co.id)**

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