

Transforming Steel Cladding

Overcoming Traditional Challenges
Using Pre-Painted Steel



UniCote®

INTRODUCTION

In architecture, the facade is the most recognisable aspect of buildings. While their visual impact is often remembered by onlookers, facades fulfil important functional purposes as well—from providing a watertight enclosure to controlling natural light, ventilation and thermal performance. Accordingly, the facade system has a significant influence on the lifespan of the building, its energy performance and the quality of its interior environment.

Facades are among the most difficult elements to design due to ongoing advancements in materials and design approaches. In addition, sustainable materials are playing a more significant role in modern design as awareness grows as to the impact of the built environment on the health of the environment as well as building occupants.

Cladding, which provides the outer skin or layer of the building, is a critical component of a facade system. A variety of materials can be used for cladding applications, including wood, stone and concrete, but one of the most popular and advantageous is steel.

Steel cladding gives buildings an air of modernity. Modern fabrication and installation techniques can result in a clean, near seamless facade with fluid connections with other materials and building elements. Steel is also highly durable, non-combustible and resistant to the elements, all of which are needed for the challenging Australian climate.

However, every material comes with its own set of challenges. In order to reap the full benefit of steel cladding, it needs to be sufficiently protected and specified with the right coating system. In this whitepaper, we help you understand the challenges associated with steel cladding and how they can be overcome with modern pre-painted steel solutions.







Cladding specification

When specifying cladding materials, climate plays a pivotal role. Local climate factors, like humidity, temperature, and proximity to the coast, can have an impact on the lifespan and performance of the cladding. Materials that can resist corrosion, for example, are needed in coastal environments, whereas materials that can withstand moisture without degrading are needed in high-humidity regions.

The choice of material is another critical factor when it comes to steel cladding. Each type of metal has unique properties and can be used for a variety of purposes. Choosing the right metal for your project will minimise maintenance requirements and guarantee the longevity of the cladding. For example, aluminium is lightweight and

naturally resistant to corrosion, so it is commonly specified for coastal areas. Steel may be preferred for its strength and durability, but it will need protective measures applied to it if it is being used in corrosive environments.

Ensuring the longevity and efficacy of metal cladding requires careful installation. It is essential to make sure the cladding is installed correctly and in accordance with the manufacturer's instructions. This entails selecting trustworthy and reputable suppliers and installers who understand how the material's properties line up with the project's particular needs. Proper installation contributes to the overall performance and longevity of the cladding system by preventing problems like thermal bridging, water infiltration, and structural damage.

Why steel cladding?

Steel's high strength and durability are particularly advantageous in an architectural context. The high tensile strength and capacity to support loads of steel cladding panels can enhance a building's structural integrity. They are ideal for regions with severe weather since they provide additional support to the main structure and enhance a building's resistance to outside elements.

Coupled with their high strength, steel panels are also relatively lightweight. Along with being easier to transport, steel cladding lends itself to a more efficient method of construction and thus a lower carbon footprint when compared with other traditional building materials.

Another factor to consider when specifying steel cladding is fire resistance. Multi-storey buildings, especially commercial and residential buildings, require non-combustible cladding. Steel does not burn, provide an ignition source, or add a fuel load that would allow a fire to spread.

Steel cladding, therefore, can help architects and specifiers meet the fire performance requirements of the National Construction Code. For example, UniCote®'s pre-painted steel range conforms to AS1530.3 is non-combustible and may be used as part of a compliant system in bushfire-prone areas, including in the most extreme BAL-FZ (Bushfire Attack Level-Flame Zone).¹

Steel cladding panels provide a great deal more design flexibility than traditional cladding materials without compromising longevity or performance. Available in a wide range of styles, finishes, and colours, steel cladding can complement sleek, modern looks and will not look out of place even in more traditional designs.

The installation process is also notably quicker and less labour-intensive than traditional cladding materials, particularly with products that utilise special fastening mechanisms. The ease of use of steel cladding makes it suitable for a range of budgets, sites and applications.

Challenges with steel cladding

Despite their many architectural advantages, corrosion remains a challenge for steel cladding materials. When cladding sheets are manufactured, they are coated with corrosion-resistant coatings to maximise corrosion performance. These coatings are consumed over time in order to protect the cut edge.

In some instances, such as when CorTen steel or weathering steel is specified, the patina (surface rust) is desirable for its industrial aesthetic appeal. Designers and specifiers who are trying to achieve this look will need to take care, as often the patina is not consistent and there is a high risk of the rust bleeding or running off onto other materials. Despite the patina providing a protective layer, warranties on Corten or weathering steel are not generally offered.

Other aesthetic issues with steel cladding include colour fading, which is the term used to describe ultraviolet (UV) degradation caused by prolonged exposure to UV light, and chalking. The latter refers to when paint on steel cladding naturally weathers, forming a light oxide (chalk) subject to paint type, pigment type, and exposure conditions.

There is also a lack of aesthetic variety in some steel cladding product lines. This ultimately leads to monotonous designs that use the same steel colours over and over again. Additionally, there is a growing preference for natural finishes like timber and, thus, a demand for better-quality timber-look options.

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Pre-painted steel: a superior cladding solution

Pre-painted steel cladding consists of the substrate, conversion coating, primer and top paint coats on both surfaces. Optimal performance requires synergy and compatibility between the substrate and various paint system components. Due to the varying levels of performance needed, the surfaces of pre-painted steel cladding may have different coatings applied to them.

Colour coating is a significant component of the overall life and performance of steel cladding. Brands like **UniCote®** use high-performance coating systems to give painted steel additional long-term protection under corrosive conditions, maintaining its strength and integrity.

UniCote® LUX—a versatile solution for high-end architecture

UniCote® LUX is a premium pre-painted steel product that combines the beauty of natural finishes with the strength of steel, designed to suit Australian high-end architecture. Combining the world's best coil coating technology with rigorous testing to Australian Standards, it ensures not only superior performance in the harsh Australian environment but also a stunning patterned and textured finish.

UniCote® LUX utilises a hot-dipped Aluminium/Zinc/Magnesium alloy-coated substrate, paired with state-of-the-art PVDF organic coating systems. This combination results in an exceptionally durable paint system that offers superior colour and gloss retention and is designed to withstand UV damage from the harsh Australian sun.



Benefits of UniCote® LUX

Architectural Challenge	UniCote® LUX
Resistance to corrosion, chalking and colour fading	<ul style="list-style-type: none"> • Resistant to corrosion • Resistant to chalking • UV-durable finish maximises colour retention • Environmental suitability 400 m+ from marine influence*
Aesthetic variety	<ul style="list-style-type: none"> • Available in 12 unique patterned and textured finishes • Unique substitute for natural, exotic and metallic finishes
Warranties	<ul style="list-style-type: none"> • Cladding warranty up to 25 years
Fire resistance	<ul style="list-style-type: none"> • Non-combustible (fire-rated) to AS1530.3 • Suitable for bushfire attack level BAL FZ
Compliance	<ul style="list-style-type: none"> • Designed and tested to be fully compliant with Australian Standards and all relevant building codes

*Warranty applications will be considered under 400m dependent on project specifics.

Colours and patterns

UniCote® LUX offers a unique premium range of modern patterned and textured steel finishes, serving as a substitute for natural timbers, corten, zinc and exotic finishes. Create a stunning focal point using a range of patterned and textured finishes, including:

Corten. These distinct finishes, Weathered Iron and Corten Red, offer a stunning and authentic weathered appearance, inspired by the rich patina of Corten steel. Designed to bring the beauty of natural rusted metal to architectural projects, these patterns provide a rustic, industrial aesthetic that adds depth and character to any structure without the risk of run-off and stains.

Timber. This range offers a remarkable alternative to traditional timber, providing the warmth and natural beauty of wood with enhanced durability, low maintenance requirements and compliance as part of a system when used in BAL-FZ bushfire-prone areas, given its non-combustible nature.

The PVDF paint system on UniCote® LUX ensures the colours remain vibrant over time. Unlike natural wood, UniCote LUX timber finishes are low-maintenance and don't need sanding or varnishing to keep their appearance. Additionally, the durability of steel prevents it from warping, unlike real timber, even under the harsh and changing conditions of the Australian climate.

Zinc. This range has been meticulously crafted to replicate the captivating aesthetics of Zinc and Titanium, offering a sophisticated cladding solution for architects, builders, and designers.

Zinc Graphite offers a rich, dark graphite tone with hairline grains that reflect light, adding contemporary elegance to modern designs. Silver Quartz, with its light, silvery hues, mimics the natural patina of zinc, creating a textured

depth that enhances both contemporary and traditional architectural projects.

Imprinting. This collection of distinct and unique patterns boasts enriched textures, enabling light to bounce in various directions, creating captivating reflections. The Pentagon pattern introduces interlocking geometric shapes for a bold, modern design, while Saffiano replicates the luxurious texture of iconic crosshatched leather. Spectrum adds depth with its abstract pattern and reflective lines, enriching architectural designs through dynamic light interactions.

Midnight Matt. Midnight Matt, the darkest matt black in the Australian market, exudes elegance and sophistication with its deep, velvety hue. This finish makes a bold statement, ideal for creating striking contrasts and modern aesthetics.

Metal Stone. This refined finish mimics the raw, rugged appeal of concrete, blending industrial strength with subtle elegance. Metal Stone is inspired by the industrial appeal of concrete surfaces, adding a touch of urban sophistication to any architectural design.

Tested to Australian conditions

UniCote® ensures their steel will perform in the harshest conditions at Australian standard certified real-world testing sites in Birdsville (QLD) for UV performance, Shellharbour (NSW) and Muriwai (NZ) to stand up against punishing coastal environments.

UniCote® LUX products are comprehensively tested to meet the strict requirements of AS/NZS 2728:2013 for salt spray, humidity, and UV resistance. It is suitable for atmospheric environments up to ISO 9223:2012 - Category 4: Severe Marine and can be used in areas 400 m+ from marine influence (warranties within 400 m may be available on application).



About UniCote® Steel solutions

For nearly a decade, UniCote® Steel has been a trusted choice of Australians when it comes to safeguarding their most prized possession or bringing their visionary designs to life. While extremely popular for roofing, UniCote® goes beyond this, ever increasing its popularity with exterior cladding and offering a contemporary aesthetic that pairs seamlessly with materials like wood and concrete.

A variety of environmental factors specific to the Australian landscape are crucial in selecting the ideal UniCote® Steel solution for your project. UniCote® offers a Four-Tier Metal Solution (Select, Coastal, Extreme, and LUX) to enable architects, builders, and designers to break free from the constraints of a one-size-fits-all approach.



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REFERENCES

- ¹ UniCote. "Product solutions for bush fire prone areas." UniCote. <https://unicote.com.au/technical-resources/product-solutions-for-bush-fire-prone-areas> (accessed 12 August 2024).