



# CUSTOMISING RESIDENTIAL FACADES

Aluminium Composite Materials in Design and Specification

## Introduction

Across Australia, residential design is shifting toward greater facade customisation and material expression. Architect-designed homes, duplexes and boutique multi-residential projects are placing increased emphasis on individuality, site response and layered materiality. Facades are no longer treated as uniform skins but as composed elements that integrate form, texture and colour. Customisation is now a key marker of value, particularly in higher-end housing,<sup>1</sup> where facade design contributes directly to identity, street presence and perceived quality.

These factors are reshaping material selection, with architects seeking versatile systems that can provide predictable performance, efficient installation and compliance with regulatory requirements. In response, cladding materials are increasingly specified to balance durability and performance with design flexibility, with Aluminium Composite Materials (ACMs) emerging as a versatile, high-performance cladding solution for modern residential projects.





## Aluminium composite materials in residential applications

### Material composition and performance

ACMs are manufactured as multi-layer panels consisting of two thin aluminium face sheets bonded to a lightweight core. This configuration produces a panel that is rigid yet low in weight, making it suitable for facade cladding in residential construction. The high strength-to-weight ratio enables larger panel sizes without excessive structural demand.

Modern ACM products are available with fire-retardant and non-combustible core options. This allows their use in applications where compliance with the National Construction Code (NCC) is required. Careful specification of core type, system configuration and supporting documentation is essential to ensure alignment with current regulatory requirements and performance expectations.

ALPOLIC™ is a branded family of ACM panels produced by Mitsubishi Chemical Infratec Co., Ltd, used widely in architectural facade and cladding applications. These panels are available with a range of core types, including fire-retardant (FR) and non-combustible (NC) options, with the core determining fire performance. ACMs with non-combustible cores are typically required where external walls must be non-combustible under NCC provisions.

### Benefits for residential applications

#### Fabrication and design flexibility

ACM panels can be prefabricated with consistent curves, folds, returns and joint details. This is particularly valuable where curved walls or flowing geometries are used to respond to site conditions or soften built form. It also allows for controlled articulation at elements such as entries, window surrounds and parapets.

The ability to form both simple and more unique geometries allows greater variation in facade design without significantly increasing construction complexity. Curved elements, panel layouts and junctions can be

resolved during design and fabricated off-site, supporting faster installation and more predictable outcomes while maintaining the intended architectural expression.

#### Surface finish and durability

Factory-applied coatings provide a consistent and durable surface finish. These coatings are typically engineered for resistance to UV exposure, colour fade and surface degradation, which is critical in Australian climates. The controlled manufacturing process reduces variability compared to site-applied finishes and supports long-term aesthetic consistency across the facade.

#### System integration

ACMs are commonly installed as part of ventilated facade systems, where panels are fixed to a subframe with provision for drainage and airflow. This approach assists with moisture management and contributes to overall facade performance.

ACM panels can also be integrated with a wide range of other facade materials, including masonry, fibre cement and glazing systems. This makes them well suited to hybrid facade compositions, where multiple materials are used to create depth, contrast and articulation.

#### Installation efficiency

Prefabrication is a key advantage of ACM systems and should inform how facades are designed and detailed. Panels can be cut, folded and finished off-site with a high level of precision. When panel sizes and layouts are developed to suit this process, on-site adjustments are minimised.

In addition, the lightweight nature of ACM allows for larger panels and more streamlined installation, which can support bolder, more continuous facade designs. These benefits depend on clear coordination of panel layout, fixing strategy and installation sequence.

# Expanding design possibilities with ACM

## Define the finish

ACM systems allow a broad range of visual expressions, including timber-look, metallic, matte and custom colours, which can be used to reinforce composition and contrast across the facade. Consider how the selected finish interacts with light, adjacent materials and viewing distance, particularly in streetscape conditions. Subtle variations in gloss level, texture or tone can significantly influence perception. Physical samples should be reviewed in context to assess colour accuracy, undertone and consistency across the facade.

## Panel layout and fixing methods

Panel layout should be treated as a primary compositional tool. Module sizes, joint lines and orientation can be used to reinforce proportion, rhythm and alignment across the facade. ACM panels can be set out to emphasise verticality or frame key elements such as entries and openings. Negative reveals and shadow lines can be used to create contrast and articulation in response to changing light conditions.

Rather than simply aligning with structure, panel grids can be used to establish an intentional visual outcome that overlays the building form. Fixing methods should support this intent. Concealed systems allow for cleaner, more monolithic surfaces, while visible fixings can be used to introduce a more industrial design language.

## Curved designs

ACM systems allow curvature to be treated as a deliberate design decision. Curved forms can be used to respond to site conditions or create a more fluid architectural language, while planar and faceted geometries tend to emphasise precision, order and sharp articulation.

The choice between curved and planar expression should be resolved early, as it directly influences panelisation, jointing strategies and fabrication methods. True curved panels typically require specialised forming processes and tighter tolerances, which can increase cost and lead time, while faceted panels can achieve similar outcomes with greater efficiency.

## Scale, proportion and layering

Scale and proportion play a critical role in how ACM facades are perceived, particularly in residential projects where buildings are experienced at close range. Panel size, joint spacing and module alignment should be carefully considered in relation to the overall building form and human scale. Larger panels can create a more monolithic, simplified expression, while smaller modules introduce finer detailing and texture.

Layering introduces depth and can be used to move beyond flat, two-dimensional surfaces. ACM panels can be used to create recessed and expressed elements, including blades, fins, screens and framed volumes. These strategies help articulate different parts of the building, such as entries, upper levels or transitions between materials.

## Specify performance requirements early

Performance should be considered early, alongside form and finish. Coating selection, for example, influences how colour and texture will age under UV exposure, which in turn affects the long-term appearance of the facade. In coastal or high-exposure environments, corrosion resistance and finish durability become integral to maintaining the intended aesthetic over time. These factors should inform early material decisions.

Fire performance must also be aligned with the desired architectural outcome. The choice of core type can influence how and where ACM is used within the facade composition, particularly in relation to building classification and height under NCC provisions.

Early coordination ensures that compliance requirements do not compromise the design intent at later stages. Supporting documentation, including test reports and technical data, should be reviewed to confirm that the selected system can deliver both the desired appearance and required performance.

## Designing for prefabrication

Prefabrication can be used as a tool for delivering more complex and refined facade designs with greater certainty in cost and quality. Early engagement with manufacturers and fabricators can provide valuable input into panel optimisation and detailing. Designing for repeatability is particularly important, as it allows panel modules and connection details to be standardised across the facade. This improves efficiency, reduces waste and supports consistent quality, while still allowing variation to be introduced through layout, finish or articulation.

Facades are no longer treated as uniform skins but as composed elements that integrate form, texture and colour.

## Case examples: Residential design with ALPOLIC™

### The Icon House, Barrack Point

The Icon House in Barrack Point, NSW, illustrates how ACM can be used to resolve complex residential facade design with a high level of control. Designed by I Architecture, built by Smartbuild South Coast and installed by R&S Facades, the project responds directly to its coastal setting while establishing a strong architectural identity. The design combines a sharply splayed ocean-facing facade with a curved rear elevation, creating a composition defined by contrast, movement and precise geometry. Achieving this design required a facade material capable of accommodating both angular and curved elements.

Traditional materials would have introduced complexity through segmentation, variable tolerances or increased maintenance in the exposed marine environment. ALPOLIC™/fr panels were selected as the solution, allowing the facade to be rationalised into prefabricated elements with controlled folds, returns and jointing. This enabled close coordination between design, fabrication and installation, thus ensuring that the architectural intent was carried through to construction.

Finishes in Black and Monotone Slate reinforce the building's sculptural form, while the consistency of the factory-applied coating ensures a uniform appearance

across the facade. The specified ALPOLIC™/fr panels also provide improved fire performance compared to standard PE core products to support compliance with NCC requirements for external wall construction. The Lumiflon FEVE coating delivers durability suited to coastal exposure, with resistance to corrosion, UV degradation and weathering, which helps maintain the facade's appearance over time.



### 9 Stoke Street, Mount Pleasant

Another example of ACM use in customised residential architecture is 9 Stoke Street in Mount Pleasant, Western Australia. Designed and built by Premier One Constructions and installed by Vision Clad Australia, the project is an award-winning residence recognised at the Housing Industry Association (HIA) Awards for its craftsmanship and detailing. The design is defined by strong geometric volumes, crisp architectural lines and a restrained monochromatic palette.

The primary challenge was achieving a high level of visual consistency and quality across the curved sections, flat planes and sharp edges. ALPOLIC™/fr was selected for its design flexibility, which enabled exceptional surface flatness, precise folded edges and refined junctions. The Matte Slate Black finish contributes to a bold but controlled visual identity, with consistent colour across the facade.

ALPOLIC™'s fire-retardant core is designed to enhance fire performance and support compliance with relevant facade requirements. The coating provides resistance to UV degradation, fading and chalking, which is essential to support longevity and durability in the Western Australian climate.





## VERSATILE, HIGH-PERFORMANCE ARCHITECTURAL CLADDING FOR RESIDENTIAL APPLICATIONS

ALPOLIC™ is a high-performance aluminium composite cladding system developed to support both architectural expression and regulatory compliance in the Australian context.

Available in a range of core types, including non-combustible NC/A1 and fire-retardant variants, the system is supported by CodeMark certification and NCC compliance. Beyond fire performance, the system offers a high level of dimensional stability, flatness and finish consistency to support a wide range of residential applications.

Proven in Australian conditions for over 20 years, ALPOLIC™ NC/A1 has built a reputation for exceptional long-term durability across some of the country's most demanding climates and environments. Lumiflon FEVE coating technology is central to this performance, providing outstanding resistance to UV exposure, corrosion and weathering. The result is a finish that holds its colour and integrity for decades with little to no maintenance required over the building lifecycle.

Specifiers and clients can take further confidence from a 20-year manufacturer's warranty covering materials and performance. An Environmental Product Declaration supports ALPOLIC™ NC/A1's sustainability credentials, aligning with the growing expectations of contemporary project specifications.

In Australia and New Zealand, ALPOLIC™ is exclusively distributed by **Network Architectural**, who provide local technical support from specification through to project delivery. This includes assistance with product selection, compliance documentation and coordination with project teams. Combined with its exceptional longevity and near-zero maintenance demands, it is a product built to last in demanding conditions.

Customisation is now a key marker of value, particularly in higher-end housing, where facade design contributes directly to identity, street presence and perceived quality.

## References

- <sup>1</sup> Architecture News & Editorial Desk. "Customisation and wellness to shape luxury apartment living in 2026." Architecture & Design. <https://www.architectureanddesign.com.au/editorial/industry-news/customisation-and-wellness-to-shape-luxury-apartment-living-in-2026> (accessed 7 April 2026).

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