AAF QUEENSLAND

RESEARCH & DATA — 05

SPECIFICATION, CERTIFICATION & MAINTENANCE

Supporting High-Grade Architectural Anodising from Initial Specification Through to Long-Term Building Performance

The long-term performance of architectural anodising begins well before the aluminium enters the anodising plant. Correct specification, suitable materials, controlled processing, documented quality assurance and appropriate maintenance all contribute to a finish designed for generations.

Introduction — From Specification to Service Life

Architectural anodising offers a distinctive combination of natural metallic appearance, surface hardness, corrosion resistance and long-term durability.

Unlike applied organic coatings, anodising electrochemically transforms the aluminium surface into an integral protective oxide layer.

However, the performance of the finished aluminium depends on more than the anodising technology itself.

Aluminium alloy selection, surface preparation, anodic film thickness, colouring, sealing and quality control must all be considered in relation to the intended application and environmental exposure.

These decisions are particularly important for buildings in demanding environments, including Queensland's coastal and tropical regions.

Appropriate maintenance and the potential for future refurbishment should also form part of the original specification.

AAF Queensland believes that high-grade architectural anodising is best achieved through early cooperation between architects, designers, aluminium suppliers, fabricators and the anodising specialist.

This paper provides practical guidance on the specification, certification, warranty, maintenance and long-term conservation of anodised aluminium.

5.1 How to Specify Architectural Anodising

Specification Begins with the Building

The selection of an architectural finish should commence with an understanding of the building's intended use, location, appearance and expected service life.

Anodising is used in a wide range of applications, including windows, doors, curtain walls, facade panels, screens and architectural features.

However, the requirements for general commercial anodising may differ substantially from those for external high-grade architectural finishes.

An appropriate specification should consider both the performance expected from the aluminium and the appearance required by the designer.

1. Aluminium Alloy Selection

The quality and composition of aluminium can influence the final anodised appearance.

Different alloys, extrusion conditions and manufacturing processes may produce variations in colour, texture and lustre.

This is particularly important where large areas of aluminium are intended to present a consistent architectural finish.

Architects and fabricators should confirm that the selected aluminium alloy is suitable for decorative architectural anodising.

Where possible, the source and production characteristics of aluminium intended for prominent facade elements should be coordinated.

2. Intended Appearance

Anodising retains the natural metallic character of aluminium.

Its final appearance depends on several factors, including surface preparation, anodising conditions and colouring methods.

An architect may require a matt, satin, brighter metallic or other specific finish.

These requirements should be established before fabrication and production.

AAF Queensland recommends selecting finishes from approved physical samples rather than relying solely on photographs or digital reproductions.

3. Environmental Exposure

The building's location and exposure conditions are important considerations.

External architectural aluminium may be subject to strong ultraviolet radiation, moisture, atmospheric contamination and airborne salts.

Coastal environments can be particularly demanding.

The Australian Standard AS 4312:2019 provides guidance on atmospheric corrosivity classifications.

These classifications can assist in identifying the environmental severity of the project, although local site conditions and component design must also be considered.

4. Anodic Film Thickness

The anodic oxide layer provides protection to the aluminium surface.

Its thickness should be specified according to the intended application, relevant standards and exposure conditions.

Architectural specifications commonly refer to thicknesses such as 15, 20 or 25 micrometres (μm), depending on project requirements.

However, the specified film thickness alone does not guarantee long-term durability.

The quality of the anodising process, sealing, aluminium alloy and subsequent maintenance are equally important.

5. Colour Approval and Consistency

Anodised aluminium has a distinctive metallic appearance.

Unlike opaque applied coatings, the resulting colour may be influenced by the aluminium substrate and viewing conditions.

For architectural projects, colour approval should be based on representative physical samples.

Where appropriate, an agreed colour-control procedure should establish acceptable variation between production batches.

The importance of using compatible aluminium alloys and consistent source material should not be overlooked.

6. Technical Documentation

A complete architectural anodising specification should identify:

- The nominated anodising supplier and finishing system.
- Aluminium alloy and suitable substrate requirements.
- Selected colour, lustre and surface finish.
- Required anodic film thickness.
- Applicable Australian or international standards.
- Environmental exposure and intended application.
- Colour approval and acceptable variation.
- Required processing and quality assurance records.
- Inspection and testing requirements.
- Warranty requirements, where applicable.
- Cleaning and maintenance instructions.

The Value of Early Consultation

Many potential finishing difficulties can be avoided through discussion before materials are ordered or fabricated.

AAF Queensland can assist with aluminium suitability, finish selection, physical samples and relevant processing requirements.

A successful architectural finish begins with a specification suited to the aluminium, the building and its intended environment.

5.2 AAF Evershield® Architectural Hardcoat

High-Grade Architectural Anodising for Queensland

AAF Evershield® is a high-grade architectural anodising system developed through many years of specialist aluminium finishing experience.

The system is intended to provide durable architectural finishes with the distinctive appearance of natural metallic aluminium.

AAF Queensland has established a selected range of seven primary Evershield® Architectural Hardcoat finishes for Queensland and Northern Australian projects.

The range provides a coordinated selection of metallic colours and lustres suited to contemporary architectural applications.

Other Evershield® finishes may be available by arrangement, subject to processing capability and project requirements.

What Distinguishes Architectural Hardcoat?

The term *Architectural Hardcoat* describes AAF's high-grade architectural anodising system.

It should not be confused with engineering hard anodising, which is a separate finishing category principally associated with specialised wear-resistant engineering applications.

For AAF Evershield® architectural finishes, the emphasis is on achieving an appropriate combination of:

- Durable anodic oxide protection.
- Natural metallic appearance.
- Controlled architectural colouring.
- Suitable anodic film thickness.
- Effective sealing.
- Consistent processing and appearance.
- Project-specific quality requirements.

The objective is to provide a suitable high-grade architectural finish for the intended environment, rather than simply a decorative surface treatment.

The Seven Primary Architectural Finishes

AAF Queensland's seven selected architectural finishes have been chosen to provide a practical range of metallic colours for architects and designers.

Each finish should be identified by its approved AAF reference code and physical sample.

Colour appearance can be affected by aluminium alloy, surface preparation and production conditions.

For this reason, final finish selection should be coordinated with the anodising supplier before production.

Controlled Processing

Architectural anodising involves several closely related manufacturing stages.

The quality of the completed finish depends on appropriate control of:

Surface preparation

Cleaning and preparing the aluminium to achieve the required surface character and remove contaminants.

Anodising

Controlling electrical conditions, electrolyte composition, temperature and treatment time to develop the specified anodic oxide layer.

Colouring

Using suitable colouring technology and control procedures to achieve the approved architectural appearance.

Sealing

Completing the anodic treatment to provide the intended protective characteristics.

Inspection and verification

Checking the completed finish against relevant specifications and quality requirements.

Consistency Across Architectural Projects

Large architectural projects may involve numerous components produced over several manufacturing periods.

Consistency is therefore important.

AAF recommends early agreement on aluminium source materials, approved colour samples, surface preparation and production tolerances.

Where appropriate, reference samples and production records can assist in controlling colour and appearance throughout the project.

AAF Queensland Technical Support

AAF Queensland's Geebung operation provides general commercial anodising and selected Evershield® Architectural Hardcoat finishes.

Our objective is to support architects, aluminium suppliers and fabricators in achieving suitable architectural outcomes.

This includes technical guidance from initial specification through to sample approval, processing and final delivery.

Architectural-grade anodising depends on the complete finishing system, supported by controlled manufacturing and informed specification.

5.3 Process Certification and Architectural Warranties

Why Process Verification Matters

Architectural anodising is a controlled manufacturing process.

To achieve consistent performance, the anodic oxide film must be developed under suitable processing conditions and assessed against the agreed specification.

Quality assurance provides evidence that the required processes and product characteristics have been addressed.

However, the terms *quality control*, *process certification* and *warranty* have different meanings.

Quality Control

Quality control involves the procedures used during production to monitor and verify the finishing process.

These may include:

- Verification of incoming aluminium and production instructions.
- Monitoring of anodising bath chemistry.
- Recording electrical processing conditions.
- Measuring anodic film thickness.
- Checking sealing quality.
- Monitoring architectural colour and appearance.
- Final inspection before despatch.

The extent of monitoring and documentation should be appropriate to the specified finishing system and project requirements.

Process Certification

Process certification may involve documented confirmation that nominated manufacturing requirements have been achieved.

A process certificate should identify the applicable specification, relevant production work and the characteristics being certified.

Where independent accreditation or third-party certification is required, the certification body, applicable scheme and scope must be established.

Routine production inspection records should not be represented as independent certification unless an appropriate independent certification process has actually taken place.

Production Traceability

For major architectural projects, traceability can be particularly valuable.

Project documentation may identify:

- Customer and project reference.
- Production order and processing date.
- Aluminium material and finish requirements.
- Selected colour and approved reference.
- Specified anodic film thickness.
- Relevant inspection and testing records.
- Production batch identification.

These records can help establish confidence in the completed product and assist if technical questions arise during installation or subsequent service.

Architectural Warranties

A manufacturer's warranty provides contractual assurance concerning specified aspects of product performance.

Warranty conditions can vary according to the finishing system, building location, environmental exposure, intended application and maintenance requirements.

AAF Queensland offers project-specific architectural warranty options for eligible Evershield® Architectural Hardcoat applications.

Warranty periods of up to 50 years may be available for approved projects, subject to the applicable written warranty conditions.

Such cover should not be assumed to apply automatically to every anodised product or architectural application.

The Importance of Written Approval

Where an architectural warranty is required, AAF Queensland should be consulted during the specification stage.

The project must be assessed and the applicable warranty requirements agreed in writing before production.

Factors for consideration may include:

- Building location and environmental exposure.
- Aluminium alloy and component application.
- Selected Evershield® finish.
- Specified anodic film thickness.
- Production and quality requirements.
- Installation conditions.
- Cleaning and maintenance obligations.
- Applicable exclusions and warranty terms.

A warranty application should be completed and approved before the relevant work enters production.

Warranty Versus Useful Service Life

The term of a manufacturer's warranty is not necessarily the maximum useful life of an architectural finish.

Research into historic anodised buildings has documented aluminium components remaining serviceable for more than 70 years.

The Oxford Weston Library provides a particularly informative example.

However, these historical outcomes should not be interpreted as guarantees that every anodised finish will achieve the same service life.

The appropriate objective is to establish clear performance expectations, supported by specification, quality control, maintenance and documented project requirements.

A warranty provides contractual assurance. Correct specification and controlled processing provide the technical foundation for long-term performance.

5.4 Cleaning, Maintenance and Long-Term Appearance

Even Durable Finishes Require Appropriate Care

Architectural anodising is recognised for its durability and relatively straightforward maintenance.

However, all external building materials are exposed to atmospheric deposits, weathering and environmental contamination.

Regular cleaning helps preserve appearance and reduce the accumulation of substances that may contribute to staining or corrosion.

Maintenance is particularly important in coastal and industrial environments.

Why Cleaning Matters

Dust, airborne salts, pollution and other contaminants can accumulate on aluminium surfaces.

When combined with moisture, deposits may create localised conditions that contribute to staining or corrosion.

The effects can be more pronounced on sheltered surfaces where rainfall does not provide natural washing.

For this reason, a maintenance programme should consider the actual exposure conditions of each building.

General Cleaning Recommendations

AAF Queensland recommends that routine cleaning of anodised architectural aluminium should generally involve:

1. Removal of loose deposits

Gently remove loose dust, dirt and other surface deposits using clean water or suitable soft cleaning equipment.

2. Mild cleaning solution

Wash with clean water and a suitable pH-neutral detergent or mild cleaning solution.

3. Gentle cleaning equipment

Use a soft cloth, sponge or non-abrasive brush appropriate to the finish.

4. Thorough rinsing

Rinse thoroughly with clean water to remove detergent and loosened contamination.

5. Drying where appropriate

Use a clean, soft cloth where required to minimise water marking.

Cleaning should preferably be undertaken when surfaces are cool and out of direct sunlight.

Cleaning Products to Avoid

Unless specifically approved for the particular finish, avoid:

- Strongly acidic cleaning products.
- Strongly alkaline products, including caustic cleaners.
- Harsh abrasive materials or metal scouring pads.
- Unapproved chemical solvents.
- Aggressive pressure-cleaning techniques.
- Cleaning methods likely to scratch or damage the decorative surface.

Special care should be taken with bright, polished or other decorative finishes that may be susceptible to visible marking.

Any unfamiliar cleaning method should first be tested on a small, inconspicuous area.

Coastal and Marine Environments

Buildings near the coast may accumulate airborne salt deposits more rapidly than inland buildings.

Regular cleaning can be particularly important for sheltered architectural elements, including window frames, recesses, screens and areas beneath overhangs.

The required cleaning frequency will depend on local conditions.

Proximity to breaking surf, prevailing winds, rainfall, industrial activity and surface geometry can influence the rate of contamination.

There is no single cleaning interval suitable for every building.

The maintenance programme should be established according to the manufacturer's guidance, environmental conditions and any applicable warranty requirements.

Inspection and Maintenance Records

For major architectural projects, building owners may benefit from maintaining a record of cleaning and inspection activities.

Documentation can include cleaning dates, observations of surface condition and any corrective work undertaken.

These records can assist with long-term building management and may also be relevant to project-specific warranty obligations.

Dealing with Staining or Deterioration

Where significant staining, discolouration or surface deterioration is identified, the cause should be investigated before more aggressive cleaning is attempted.

Some deposits can be removed without damage to the anodic finish.

Other conditions may involve chemical attack, corrosion or changes to the underlying aluminium.

In such cases, specialist advice is recommended.

The objective of maintenance is to preserve the original appearance and protective qualities of the anodised finish for as long as reasonably possible.

5.5 Refurbishment and Conservation of Anodised Aluminium

Retain Before Replacing

Sustainable building design increasingly recognises the importance of retaining existing materials wherever practical.

Aluminium is particularly valuable in this context because of its durability, versatility and recyclability.

However, retaining a suitable aluminium component in service may provide environmental benefits beyond those associated with recycling.

Replacement requires new materials, manufacturing, finishing, transport and installation.

If an existing component remains suitable, preserving it may avoid some of these impacts.

Assessing Existing Anodised Aluminium

Before deciding whether to replace historic anodised windows, facade elements or other components, their condition should be assessed.

Relevant considerations include:

- Age of the original installation.
- Aluminium alloy and original finish, where known.
- Structural condition of the component.

- Remaining anodic film thickness.
- Corrosion, staining and surface damage.
- Previous repairs or alterations.
- Current building performance requirements.
- Suitability for reglazing, refurbishment or continued use.

Where appropriate, non-destructive testing may help establish the condition of the original anodic finish.

Oxford — An Important Conservation Example

The New Bodleian Library at the University of Oxford, now the Weston Library, provides a significant example of retaining architectural anodised aluminium during refurbishment.

Its original anodised aluminium windows were installed around 1940.

During a major refurbishment approximately 70 years later, the frames were examined and found suitable for continued use.

The original aluminium was retained and upgraded with new glazing.

Research by Professor Michael Stacey for the International Aluminium Institute documented the condition of the anodised finish and its potential for further service.

The example demonstrates how preserving existing aluminium can contribute to sustainable building refurbishment.

It also highlights the importance of assessing actual condition rather than assuming that older components have reached the end of their useful lives.

Refurbishment Options

Depending on the condition of existing aluminium components, refurbishment may involve:

Cleaning and conservation

Removing accumulated deposits and contamination using methods appropriate to the original finish.

Replacement of associated components

Renewing glazing, seals, gaskets, hardware and other elements while retaining suitable aluminium framing.

Localised repair

Addressing particular areas of damage or deterioration where technically appropriate.

Component retention and reuse

Preserving original aluminium elements within a refurbished building or incorporating them into a suitable new application.

Limitations of Refurbishment

Not every anodised component can or should be retained.

Structural deterioration, significant corrosion, incompatible building requirements or severe damage may make replacement necessary.

In addition, anodising cannot generally be repaired in place by simply applying a new anodic layer.

Re-anodising requires suitable industrial processing and may involve stripping the original film, potentially changing dimensions or appearance.

The feasibility of such work must be assessed carefully.

Heritage Conservation

In heritage buildings, the original appearance and material character of architectural aluminium may be particularly important.

Anodising was widely used in modern architecture during the twentieth century.

The retention of original metallic finishes can help preserve architectural authenticity.

Conservation decisions should consider both technical performance and the heritage significance of the original materials.

Specialist advice may be required before cleaning, restoration or alteration of historically important aluminium components.

Environmental Value of Retention

The potential environmental advantages of retaining existing aluminium include reduced demand for new materials, less fabrication and finishing, reduced transport and less demolition waste.

These benefits should be considered alongside the technical and economic requirements of the refurbishment project.

An aluminium component that remains suitable for continued use may be more valuable in the building than in the recycling stream.

Conclusion — Supporting a Finish for Generations

High-grade architectural anodising offers a finishing technology with distinctive material characteristics and documented examples of exceptional long-term performance.

However, successful results depend on the complete process, beginning with material selection and architectural specification.

Suitable aluminium alloys, appropriate anodic film thickness, controlled processing, effective sealing and quality verification all contribute to the finished product.

Project-specific certification and warranty arrangements can provide further assurance when established and approved before production.

Once installed, appropriate cleaning and maintenance help preserve the protective and decorative qualities of anodised aluminium.

And when buildings require refurbishment, the condition of existing aluminium should be assessed before replacement is considered.

AAF Queensland is committed to supporting the successful use of architectural anodising from initial specification through to processing, installation and long-term building management.

Through the Research & Data Centre, we aim to provide practical information and relevant evidence to assist architects, designers, fabricators and building owners.

A finish for generations is achieved through informed specification, controlled manufacturing, appropriate maintenance and a commitment to retaining valuable materials in service.

Research References and Further Reading

1. Standards Australia
AS 1231:2000 — Aluminium and Aluminium Alloys: Anodic Oxidation Coatings.
Includes architectural finishing requirements and guidance on handling and maintenance.

2. International Organization for Standardization
ISO 7599:2018 — Anodizing of Aluminium and Its Alloys: Method for Specifying Decorative and Protective Anodic Oxidation Coatings.

3. QUALANOD (2026)
Specifications for the QUALANOD Quality Label for Sulphuric Acid-Based Anodizing of Aluminium.
Industry quality requirements, inspection and process control.

4. Australian Aluminium Council (2024)
Rolled Products Manual.
Technical information concerning aluminium materials, handling and maintenance.

5. AAF Technical Bulletin TB-100
The Basics of Aluminium Care.
General guidance on cleaning and maintenance of architectural aluminium finishes.

6. Stacey, M. (2014/2015)
Aluminium and Durability — Towards Sustainable Cities.
International Aluminium Institute.

7. Standards Australia
AS 4312:2019 — Atmospheric Corrosivity Zones in Australia.

8. Wyllie, B. (2025)
Low-carbon Aluminium is a Great Start — Next, Aluminium's Journey to Further Optimise Sustainability.
7th Australasian Aluminium Extrusion Conference, Brisbane.

The guidance in this paper is general in nature. Individual specifications, certification arrangements, warranty conditions and maintenance requirements should be confirmed with the relevant manufacturer and project documentation.

Explore Further

Research-01 — Anodising: The Technology
Understanding the electrochemical process and characteristics of architectural anodising.

Research-02 — Sustainability & Environmental Performance
Independent evidence concerning emissions, environmental declarations and whole-of-life sustainability.

Research-03 — Durability & Real-World Evidence
Documented examples of anodised aluminium remaining in service for many decades.

Research-04 — Technical Performance & Australian Standards
Anodic thickness, sealing, corrosion resistance, fire considerations and technical standards.

AAF Colour Selector
Explore the seven selected Evershield® Architectural Hardcoat finishes and request physical samples.

Discuss Your Project with AAF Queensland
Our team can assist with project specifications, process requirements, sample approvals and architectural warranty enquiries.

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