AAF QUEENSLAND

RESEARCH & DATA

About the AAF Queensland Research & Data Centre

AAF Queensland is committed to maintaining the availability of high-grade architectural anodising as an important finishing option for Australian architecture.

Through this research collection, we aim to share independently documented evidence, established technical knowledge and practical industry experience.

We welcome additional research, documented building examples and technical enquiries that may assist in developing this resource.

AAF Queensland is available to assist from initial design and specification through to processing, certification and installation.

Introduction

Low-carbon aluminium is an important step towards more sustainable architecture. However, the finish selected for aluminium can also influence its environmental performance, appearance and useful service life.

Architectural anodising offers a unique finishing technology, electrochemically transforming the aluminium surface into a durable, integral oxide layer rather than applying a separate organic coating.

AAF Queensland is developing this Research & Data Centre to bring together published scientific research, independent studies, technical standards and real-world evidence of the performance of architectural anodising.

Our objective is to make relevant information readily available to assist architects, designers, specifiers and building owners when considering finishes for lasting, sustainable buildings.

The library will continue to grow as additional research, technical information and project evidence become available.

1. ANODISING — THE TECHNOLOGY

1.1 Understanding the Anodising Process

How anodising works, the electrochemical transformation of aluminium, and the formation of a protective aluminium oxide surface that becomes an integral part of the metal.

1.2 Anodising vs Powder Coating — Two Different Technologies

An objective comparison of two established architectural finishing systems. Their different manufacturing processes, material properties, aesthetic characteristics, performance and service-life considerations.

1.3 High-Grade Architectural Anodising

The distinction between general commercial anodising and high-grade architectural finishes, including anodic film thickness, process control, sealing, durability and quality assurance.

1.4 Natural Metallic Colours and Finishes

How anodised colours and lustres are achieved, the influence of aluminium alloy and surface preparation, and the importance of physical samples and finish consistency.

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2. SUSTAINABILITY & ENVIRONMENTAL PERFORMANCE

2.1 Low-Carbon Aluminium Is Only the Beginning

The importance of extending aluminium's useful service life after manufacture, and how finish selection can contribute to whole-of-life sustainability.

Includes Bill Wyllie's paper presented at the 7th Australasian Aluminium Extrusion Conference, Brisbane, July 2025.

2.2 Environmental Product Declarations — Aluminium Finishing

Research into the carbon footprint of aluminium finishing processes, including the North American Aluminum Extruders Council Environmental Product Declaration comparing mill-finish, anodised and painted/powder-coated aluminium.

2.3 Australian Life Cycle Research — KMH Environmental Study

An Australian independent environmental study comparing anodising, polyester powder coating and fluoropolymer powder coating, including their respective carbon emissions and life cycle considerations.

2.4 Service Life and Whole-of-Life Carbon

Why the useful life of a building finish matters in life cycle assessment. Examining the relationship between initial embodied carbon, maintenance, refurbishment, replacement and long-term environmental outcomes.

2.5 Aluminium Recycling, Retention and Reuse

The environmental benefits of retaining aluminium building components in service, including the potential to refurbish buildings while preserving existing anodised aluminium.

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3. DURABILITY & REAL-WORLD EVIDENCE

3.1 Architectural Anodising — A Finish for Generations

An overview of documented long-term anodising performance and the distinction between product warranties, anticipated service life and measured performance in actual buildings.

3.2 Oxford — New Bodleian Library / Weston Library

Research into approximately 70-year-old anodised aluminium window frames retained during refurbishment. Published findings describe the remarkable condition of the original anodic finish after decades of service.

3.3 Australia's Early Anodised Buildings

Historical architectural examples, including Australia Square in Sydney and Collins Place in Melbourne, exploring the performance and preservation of anodised aluminium over many decades.

3.4 Brisbane's Architectural Anodising Heritage

Research into early Queensland buildings featuring anodised aluminium, including former MLC and commercial buildings. A developing record of local installations, refurbishment and long-term condition.

3.5 Coastal and Marine Performance

Anodised aluminium in salt-laden environments, including marine applications, coastal buildings and refurbishment projects. Evidence of corrosion resistance, component retention and the importance of appropriate specification and maintenance.

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4. TECHNICAL PERFORMANCE & AUSTRALIAN STANDARDS

4.1 Australian and International Anodising Standards

An introduction to the standards governing anodised aluminium, including AS 1231 and relevant international standards, their performance requirements, testing methods and specification considerations.

4.2 Anodic Film Thickness, Sealing and Quality Control

The importance of controlled film thickness, sealing effectiveness, process verification and documented quality assurance in architectural anodising.

4.3 Corrosion Resistance and Environmental Exposure

How environmental conditions affect aluminium finishes, including Australian atmospheric corrosivity classifications, marine exposure, industrial environments and the selection of suitable finishing specifications.

4.4 Fire Performance — Anodised Aluminium

The inorganic nature of aluminium oxide, its thermal characteristics and the distinction between the performance of the anodic surface and the fire performance of complete aluminium building assemblies.

4.5 Architectural Powder Coating Standards — AS 3715:2025

A reference to the Australian Standard for architectural thermoset powder coatings, including coating classifications, performance requirements and service-life guidance, to assist in understanding different finishing options.

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5. SPECIFICATION, CERTIFICATION & MAINTENANCE

5.1 How to Specify Architectural Anodising

Practical guidance covering alloy selection, intended appearance, exposure conditions, anodic thickness, colour approval and technical documentation.

5.2 AAF Evershield® Architectural Hardcoat

The AAF Queensland architectural finishing system, its selected finishes, controlled processing requirements and approach to achieving consistent architectural-grade outcomes.

5.3 Process Certification and Architectural Warranties

An explanation of process certification, production records and project-specific warranties, including the importance of written approval, project conditions and maintenance requirements.

5.4 Cleaning, Maintenance and Long-Term Appearance

Recommended approaches to cleaning and maintaining anodised aluminium, particularly in coastal and exposed environments, to protect both finish performance and architectural appearance.

5.5 Refurbishment and Conservation of Anodised Aluminium

Considerations for assessing, retaining, cleaning and reusing existing anodised components in building refurbishment and heritage conservation projects.

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6. RESEARCH PAPERS, PUBLICATIONS & REFERENCES

6.1 AAF Research Paper Series

A developing series of technical papers exploring anodising technology, sustainability, durability, comparisons with alternative finishes and practical specification guidance.

6.2 Independent Scientific Research

A reference collection of published third-party scientific reports, life cycle assessments, environmental product declarations and architectural durability research relevant to aluminium finishing.

6.3 Conference Papers and Industry Publications

Technical papers and presentations from Australian and international aluminium industry conferences, including research into the sustainability and long-term performance of anodised aluminium.

6.4 Research Sources and Reference Library

A consolidated bibliography providing document titles, authors, publication dates and links to original source materials, where available.