

1. Product Overview

1.1 Product Identifier

Product Name: Ballesta® Anodized Aluminum Wall Panels

Product Code: [Customizable, e.g., AW-AN-1500x3000x2.0-AA20]

Description: This product is a premium anodized aluminum wall panel precision-fabricated from globally sourced anodized aluminum sheets and coils. Through an electrochemical process, the aluminum surface is converted into a durable, corrosion-resistant aluminum oxide layer that is fully integrated into the substrate at the molecular level — never peeling, chipping, or flaking. Available as solid panels, honeycomb composite panels, baffle systems, custom-shaped panels, and column cladding. Designed for exterior facades, curtain walls, interior feature walls, and high-end architectural applications that demand superior durability with a timeless metallic finish.

2. Technical Specifications

Aluminum Substrate Material	AA 3003 (H24/H44), AA 5005 (H24/H44), AA 5052 (H32) Available in panel, coil, or pre-cut sheet form	ASTM B209, GB/T 3880, ISO 7599
Anodizing Thickness Grade	AA15 (15µm) — Interior AA20 (20µm) — Standard exterior AA25 (25µm) — Coastal/marine exterior	ISO 7599, AAMA 611
Panel Dimension (Solid)	Custom up to 1500mm × 4000mm (Width × Length) Length Tolerance: ±2mm, Width Tolerance: ±1mm	ISO 128, YS/T 429.1
Panel Thickness	1.5mm, 2.0mm, 2.5mm, 3.0mm (Substrate) Thickness Error: ±0.1mm	ASTM B209

Surface Finish Options	Standard anodized (satin), brushed anodized, matte anodized, mirror anodized	AAMA 611
Color Range	Natural silver (clear), champagne, light/medium/ dark bronze, black, gold. Custom two-step electrolytic coloring available.	AAMA 611, ISO 7599
Color Difference Tolerance	Monochrome batch: $\Delta E^*ab \leq 1.5$ Inter-batch: $\Delta E^*ab \leq 3.0$ 20-year outdoor fade: $\Delta E^*ab < 5$	ISO 7724-1
Surface Hardness	Pencil Hardness: 9H (Pencil scratch test) Approaching Mohs 8 — sapphire-like surface	ASTM D3363
Corrosion Resistance (Salt Spray)	$\geq 1000h$ minimum (AA20 grade) No pitting or blistering per AAMA 611 criteria	ASTM B117, AAMA 611
Fire Resistance Rating	Class A — Non-combustible Flame spread index ≤ 25 , Smoke developed index ≤ 50	ASTM E84, EN 13501-1 (A1/A2)
Installation System	Concealed clip system / Hook-on bracket system / Visible fastener system (project-specific)	AAMA 501.6
UV Stability	Inorganic color — no measurable degradation Color shift $< 5 \Delta E^*ab$ over 20	AAMA 611, ISO 7599

	years outdoor exposure	
Flatness Tolerance	≤1.5mm/m (No wavy deformation or uneven defects)	YS/T 429.1
Tensile Strength	AA 3003: 145–180 MPa AA 5005: 145–185 MPa AA 5052: 195–260 MPa	ASTM E8, GB/T 3880
Adhesion (Oxide Layer)	Integral to substrate — anodized layer is grown from the aluminum itself. No peel, chip, or flake possible.	N/A (non-applicable — integral coating)
Density	2.70 g/cm ³ (pure and alloyed aluminum)	ASTM D792
Warranty	Up to 30 years for exterior applications (Color stability and anodic coating integrity)	Ballesta Standard Warranty

3. Manufacturing Process

3.1 Premium Anodized Aluminum Sourcing:

Ballesta sources high-grade anodized aluminum sheets and coils from world-class anodizing specialists who operate continuous anodizing lines with rigorous quality control. The anodized layer (AA15-AA25 thickness per ISO 7599/AAMA 611) is factory-applied before Ballesta receives the material, ensuring consistent oxide quality and color uniformity.

3.2 Precision CNC Cutting:

Anodized aluminum sheets are precision-cut using CNC equipment to specified dimensions. Cutting parameters are optimized to prevent edge chipping or micro-cracking of the anodized layer. Tolerances are maintained at ±0.5mm per linear meter.

3.3 Edge Processing & Folding:

Panels undergo edge folding with precise control of fold angle ($90^{\circ} \pm 1^{\circ}$) and consistent fold height. Protective masking is applied during edge processing to prevent scratches on the anodized surface. All edges are deburred for safe handling and clean installation.

3.4 Corner Welding & Polishing:

For fabricated panels, corners are TIG-welded with aluminum filler rod, then ground and polished to restore the anodized appearance. Post-weld cleaning removes oxidation discoloration. For full anodized finish restoration, panels can be re-anodized post-fabrication upon request.

3.5 Surface Protection & Masking:

Each fabricated panel is covered with PE protective film to prevent surface damage during handling, transportation, and installation. The film is UV-resistant and removable without adhesive residue for up to 6 months of outdoor exposure.

3.6 Accessory Matching & Packaging:

Installation accessories — concealed clips, hook-on brackets, or visible fastener systems — are matched to each panel specification. All hardware is fabricated from corrosion-resistant stainless steel or galvanized steel to prevent galvanic reaction with the anodized aluminum.

4. Application Scope

This anodized aluminum wall panel is widely used in premium architectural decoration fields, including but not limited to:

- Exterior facades and curtain wall systems for commercial office towers, corporate headquarters, and luxury retail
- Interior feature walls, lobby cladding, column covers, and soffit panels in hotels, airports, and cultural venues
- High-end residential tower cladding, metro station wall paneling, and convention center interiors
- Coastal and marine environments requiring superior salt spray resistance with minimal maintenance
- Educational campuses, museum gallery walls, and performance venues demanding premium metallic aesthetics with 30+ year service life

5. Compliance Standards

- **ISO 7599: Anodizing of Aluminum — General Specifications for Anodic Oxidation Coatings**
- **AAMA 611: Voluntary Specification for Anodized Architectural Aluminum (AA15/AA20/AA25)**
- **ASTM B209: Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate**
- **ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials (Class A)**
- **EN 13501-1: Fire Classification of Construction Products (A1/A2 Non-combustible)**
- **ASTM B117: Standard Practice for Operating Salt Spray (Fog) Apparatus (≥1000h)**
- **ASTM D3363: Standard Test Method for Film Hardness by Pencil Test (9H Hardness)**

- ISO 7724-1: Paints and Varnishes — Colorimetry — Color Difference ($\Delta E^*_{ab} < 5$ over 20 years)

6. Packaging & Storage

Packaging: Each anodized aluminum panel is covered with PE protective film to prevent surface scratches, then packed in reinforced wooden crates with foam corner protectors. Panels are separated with interleaving paper to prevent surface contact.

Storage: · Store in a dry, ventilated and rainproof warehouse, avoid direct sunlight, high temperature and high humidity environment.

- Avoid contact with sharp objects, chemicals and corrosive substances to prevent surface damage and oxidation marks on the anodized finish.
- Stacking height shall not exceed 2 layers for anodized panels to prevent flatness deformation and surface abrasion between panels.
- The storage site shall be far away from fire sources. Anodized aluminum is non-combustible (Class A) and presents no fire hazard.

7. Quality Assurance

All anodized panels undergo strict multi-item quality inspection before delivery, including anodizing thickness verification (eddy current per ASTM D7091), color uniformity assessment (ΔE^*_{ab} measurement per ISO 7724-1), dimensional tolerance check, flatness inspection, and scratch-free surface validation. Anodizing thickness is verified at multiple points per panel per AAMA 611 sampling protocol.

We provide a warranty period of up to 30 years for anodized aluminum panels (under normal use conditions defined in our warranty terms) for exterior architectural applications. The anodized finish is guaranteed against peeling, chipping, or flaking for the warranty period. Color stability is warranted with less than 5 ΔE^*_{ab} fade over 20 years of outdoor exposure.
