

1. Product Overview

1.1 Product Identifier

Product Name: Ballesta® Column Cladding Systems

Product Code: B-CC-001

Description: Ballesta column cladding systems transform structural support columns into distinctive architectural features. Precision-engineered aluminum wraps fit any column geometry including square, rectangular, circular, tapered, slanted, polygonal, and freeform columns. Each project is backed by detailed shop drawings, 3D modeling (Revit, Rhino, SketchUp), and optional physical mock-ups for design approval. Suitable for interior and exterior applications with concealed clip fixing systems and custom finish options.

2. Technical Specifications

Item	Specification	Test Standard
Aluminum Substrate Material	Indoor: AA 3003 (H24 Temper) Outdoor: AA 3003/5005 (H24 Temper) 3003 Mn: 1.0%-1.5%; 5005 Mg: 0.5%-1.1%	ASTM B209, GB/T 3880
Panel Thickness	Aluminum: 2.0–3.0 mm Stainless Steel 304/316: 1.2–1.5 mm Thickness Error: ± 0.1 mm	ASTM B209, ISO 16809
Column Shape Capability	Square, rectangular, round, tapered, slanted, polygonal, freeform	Per project specification
Panel Segmentation	Single-face, multi-face, wrap-around, segmented ring	Per project shop drawing

	Custom per project geometry	
Max Panel Width	Up to 1500 mm per face (larger available with joint integration)	Per project specification
Max Panel Length	Up to 4000 mm (longer available with stacked segments)	Per project specification
Corner Detail Options	Mitred 45°, folded radius (R>10 mm), corner extrusion, seamless wrap	Per project design detail
Joint Types	Open reveal (6–20 mm), butt joint, silicone sealant, gasket	AAMA 501.6
Fixing System	Concealed clip, Z-clip, hook-on bracket, through-fixed with caps	AAMA 501.6
Subframe	Adjustable cold-formed steel brackets or custom aluminum subframe	Per structural calculation
Finishes Available	PVDF (FEVE), powder coating (RAL/Classic), anodizing, brushed, mirror, wood grain, stone-like	AAMA 2605 / Qualicoat
Fire Resistance	Class A non-combustible (ASTM E84: Flame Spread Index ≤ 25, Smoke Developed ≤ 450)	ASTM E84, GB 8624 A1, EN 13501-1
Wind Load Resistance	Engineered per project — tested to AS/NZS 1170 or ASTM E330	AS/NZS 1170, ASTM E330
Coating Thickness	PVDF: ≥60 µm	ASTM D7091

	Powder coating: $\geq 60 \mu\text{m}$ Anodizing: 10–25 μm	
Adhesion Strength	Cross-cut test: Classification 0 (no detachment) per ASTM D3359	ASTM D3359
Color Consistency	$\Delta E^*_{ab} \leq 2.0$ per ISO 7724-1	ISO 7724-1

3. Manufacturing Process

3.1 Column Geometry Assessment & Measurement

Classify the column by shape (square/round/slanted/freeform), extract dimensions from architectural drawings or on-site laser scanning. Identify critical constraints such as adjacent building elements, service penetrations, and structural attachments. For renovation work, 3D laser scanning ensures existing column tolerances are captured accurately.

3.2 Panel Segmentation & Design

Optimal division of the column surface into manageable panels considering material sheet size, transport constraints, visual joint alignment, corner treatment, and on-site handling logistics. Develop segmentation strategy per column type — single-face wraps for slender columns, multi-panel wraps for oversized sections, segmented rings for round columns.

3.3 3D Modeling & Flat Pattern Development

Each panel face is modeled in 3D and unfolded for CNC programming. Precision flat pattern development ensures accurate bending, rolling, and corner forming. For round columns, CNC-developed roll-forming patterns guarantee precise curvature. For special-shaped columns, custom non-rectangular development is required.

3.4 Material Cutting, Forming & Fabrication

Precision cutting of AA3003/AA5005 aluminum sheet. Edge folding with precise control of fold angle ($90^\circ \pm 1^\circ$). Roll-forming for curved panels. Welding and assembly of multi-piece wraps. Concealed bracket and clip installation at the factory for ready-to-install panel sets. Controlled expansion joints and mitred corners for seamless appearance.

3.5 Surface Finishing & Quality Inspection

Application of specified finish — PVDF (FEVE), powder coating, anodizing, or specialty finish (brushed, mirror, wood grain, stone-like). Multi-point testing of color consistency, coating thickness ($\geq 60\mu\text{m}$ for PVDF), gloss level, and adhesion strength. Flatness calibration and dimensional verification against shop drawings.

3.6 Labeling, Packaging & Shipping

Each panel is labeled with project ID, panel number, and installation position. Covered with protective PE film, packed in wooden crates with foam cushioning. Panel sets organized per installation sequence. Shipping documentation includes packing list,

installation drawings, and hardware inventory.

4. Application Scope

This column cladding system is widely used in architectural applications including but not limited to:

- Hotel lobbies, office atriums and corporate headquarters
- Airport terminals, metro stations and railway transit hubs
- Retail malls, shopping centers and exhibition halls
- Cultural venues, museums, galleries and civic buildings
- Hospital entrances, educational facilities and sporting arenas

5. Compliance Standards

- **ASTM B209: Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate**
- **ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials**
- **ASTM E330: Standard Test Method for Structural Performance of Exterior Windows and Wall Systems**
- **GB 8624 A1: Non-combustible building material classification (China)**
- **ISO 9001:2015: Quality Management Systems (SISA certified)**
- **AAMA 2605: Voluntary Specification for High-Performance Organic Coatings on Aluminum Extrusions**
- **EN 13501-1: Fire Classification of Construction Products (Class A)**
- **AS/NZS 1170: Structural Design Actions for Wind Loading**

6. Packaging & Storage

Packaging: Each column cladding panel is covered with protective PE film to prevent scratches, then packed in wooden crates with foam cushioning. Panel sets are organized per installation sequence with clear labeling. Hardware kits are packed separately with installation drawings.

Storage: · Store in a dry, ventilated and rainproof warehouse, avoid direct sunlight, high temperature (above 50°C) and corrosive gases.

- Avoid contact with sharp objects, chemicals and corrosive substances to prevent surface damage and coating degradation.
- Stacking height shall not exceed 3 layers to prevent flatness damage caused by excessive pressure.
- The storage site shall be far away from fire sources to meet the fire safety requirements of Grade A materials.

7. Quality Assurance

All column cladding panels undergo strict multi-item quality inspection before delivery, including dimensional tolerance verification, flatness measurement, coating thickness

testing (ASTM D7091), adhesion strength (ASTM D3359), color consistency ($\Delta E^*_{ab} \leq 2.0$ per ISO 7724-1), and visual inspection under standard lighting conditions.

We provide a warranty period of not less than 15 years for the product under normal use conditions and proper maintenance. Warranty covers coating integrity, structural stability, and dimensional conformance to approved shop drawings.
