

1. Product Overview

1.1 Product Identifier

Product Name: Ballesta® Corrugated Composite Panel

Product Code: Ballesta-CCP-Sinusoidal/Trapezoidal

Description: This corrugated composite panel is manufactured from high-grade AA3003 H24 / AA5005 H24 aluminum alloy, precision roll-formed into sinusoidal (wave) or trapezoidal profiles for architectural facade cladding and rainscreen systems. The corrugated geometry inherently increases panel rigidity by up to 200% compared to flat sheet, allowing wider substructure spacing and lighter support frames. Available in wave heights of 15-50mm, pitches of 50-200mm, and panel thicknesses of 0.7-1.2mm. Premium PVDF fluorocarbon coating (70% Kynar 500 resin) at 25-35µm ensures outstanding UV resistance, color retention, and corrosion protection for a service life of 20+ years.

2. Technical Specifications

Item	Specification	Test Standard
Aluminum Substrate Material	AA3003 H24 / AA5005 H24 Aluminum Alloy	GB/T3190-2020, ASTM B209
Panel Thickness	0.7 mm / 0.8 mm / 1.0 mm / 1.2 mm Thickness Error: ±0.03mm	ASTM B209, ISO 7591
Profile Shape	Sinusoidal (Wave) / Trapezoidal / Custom	ISO 128, Custom Profile Drawing
Wave Height	15mm / 20mm / 25mm / 30mm / 38mm / 50mm Height Error: ±0.5mm	Profile Design Standard
Wave Pitch (Center-to-Center)	50mm / 75mm / 100mm / 150mm / 200mm Pitch Error: ±1mm	Profile Design Standard

Maximum Panel Length	6,000mm (standard) / 8,000mm (custom) Length Error: +5mm, 0mm	ISO 7591, Custom
Maximum Panel Width (formed)	1,200mm	Profile Design Standard
Coating System	PVDF Fluorocarbon (70% Kynar 500 resin) Two-coat or three-coat system	AAMA 2605
Coating Thickness	25-35µm (face) / 15-20µm (back) ±5µm tolerance	ASTM D7091
Color Options	RAL standard colors, metallic, mica, custom Gloss: 30±5% (standard)	ISO 7724-1, Spectrophotometer
Fire Resistance Rating	Class A1 (Non-combustible per EN 13501-1) Also compliant with ASTM E84 Class A	EN 13501-1, ASTM E84
Flatness	≤1.5mm/m for flat sheet prior to forming Profile tolerance per drawing	YS/T429.1
Adhesion Strength	No peeling/removal at cut edges Cross-hatch: Grade 4B-5B	ASTM D3359
Pencil Hardness	≥ HB (ASTM D3363)	ASTM D3363
Salt Spray Resistance	≥1000h (per ASTM B117) No blistering, no creep beyond 2mm from scribe	ASTM B117
Corrosion Resistance	High humidity: ≥96h at 95% RH No visible corrosion or	ASTM D1735

	blistering	
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3. Manufacturing Process

3.1 Aluminum Coil Receiving & Inspection:

Receipt and inspection of AA3003/AA5005 aluminum coils. Verification of alloy composition per GB/T3190-2020, thickness tolerance check, and surface quality assessment. Approved coils are logged into the production batch system.

3.2 Roll Forming & Profiling:

Continuous roll forming of aluminum coil through progressive roller dies to achieve the specified sinusoidal or trapezoidal profile. Precision control of wave height ($\pm 0.5\text{mm}$), pitch ($\pm 1\text{mm}$), and profile geometry. Forming speed optimized for material thickness and profile complexity.

3.3 Cutting to Length:

Flying shear cuts the continuous formed profile to specified panel lengths (standard up to 6000mm, custom up to 8000mm). End trimming ensures square cut ends ($\pm 0.5^\circ$) for clean butt joints. Burr removal and edge deburring performed on all cut edges.

3.4 Surface Pretreatment:

Aluminum surface undergoes multi-stage pretreatment: alkaline degreasing, water rinsing, chromate or chrome-free conversion coating, and final DI water rinse. Pretreatment ensures optimal adhesion of the PVDF coating system and long-term corrosion resistance.

3.5 PVDF Coating Application:

Application of PVDF fluorocarbon coating (70% Kynar 500 resin) via reverse roll coater or spray. Two-coat system (primer + topcoat) or three-coat system (primer + color coat + clear coat). Coating thickness 25-35 μm , with back coating of epoxy or polyester at 15-20 μm . Cured in multi-zone oven at 220-250 $^\circ\text{C}$.

3.6 Quality Inspection & Packaging:

Multi-point quality inspection: dimensional accuracy, coating thickness (eddy current), color consistency (spectrophotometer, $\Delta E^*_{ab} \leq 1.5$), adhesion (cross-hatch per ASTM D3359), pencil hardness (HB per ASTM D3363), and salt spray resistance ($\geq 1000\text{h}$ per ASTM B117). Panels are interleaved with protective film and packed in sturdy wooden crates with foam cushioning.

4. Application Scope

Ballesta Corrugated Composite Panels are widely used in architectural facade and cladding applications, including but not limited to:

- Building facades and curtain wall cladding for commercial and public buildings
- Rainscreen and ventilated facade systems for moisture management
- Airport terminals, railway stations, metro stations and other transport hubs
- Sports stadiums, cultural centers, and large-span public venues
- Industrial buildings, warehouse cladding, perimeter fencing and screening

5. Compliance Standards

- **GB/T3190-2020: Chemical Composition of Wrought Aluminum and Aluminum Alloys**
 - **ISO 9001: Quality Management Systems**
 - **EN 13501-1: Fire Classification of Construction Products (Class A1)**
 - **ASTM B209: Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate**
 - **ASTM D3363: Standard Test Method for Film Hardness by Pencil Test**
 - **ASTM B117: Standard Practice for Operating Salt Spray (Fog) Apparatus**
 - **AAMA 2605: Voluntary Specification for High Performance Organic Coatings**
 - **ISO 7724-1: Paints and Varnishes - Colorimetry**
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6. Packaging & Storage

Packaging: Each corrugated panel is protected with removable PE interleaving film to prevent surface scratches, then packed in heavy-duty wooden crates with foam padding at contact points. Panels are bundled in stacks of 10-20 depending on thickness. Crates are strapped with steel bands and marked with handling instructions and product labels.

Storage: Store in a dry, ventilated and rainproof warehouse. Avoid direct sunlight and high temperature (>70°C). Keep away from chemicals, solvents and corrosive substances.

Stacking: Panels shall be stored on a flat surface. Stacking height shall not exceed 1 meter to prevent profile deformation. When stored on edge, panels must be supported at regular intervals to maintain profile shape.

Handling: Use suction lifters or padded clamps for mechanical handling. Manual handling requires clean gloves to prevent oil or dirt transfer. Do not drag panels across each other or rough surfaces.

Environmental: The storage area shall comply with fire safety requirements for Class A1 materials. Avoid exposure to salt spray, industrial pollution, or coastal atmospheres without proper protective wrapping.

7. Quality Assurance

All Ballesta corrugated composite panels undergo strict multi-item quality inspection before delivery, including dimensional tolerance, profile geometry, coating thickness, color consistency, adhesion strength, pencil hardness, and salt spray resistance. Each production batch is traceable through our quality management system.

We provide a warranty period of not less than 20 years for PVDF coating performance (under normal use conditions and compliance with maintenance guidelines) and 15 years for structural integrity of the aluminum substrate. Extended warranty options are available upon request for major projects.
