

1. Product Overview

1.1 Product Identifier

Backlit Wall Panels

BWP-2000

Ballesta Backlit Wall Panels combine precision metal fabrication with integrated LED lighting systems to create stunning architectural feature walls. Three illumination methods are available: edge-lit (15–25mm depth) for uniform low-profile glow; direct backlit (60–120mm depth) for high-lumen applications; and perforated-through (50–100mm depth) for patterned light effects. Panel materials include aluminum AA1100/AA3003 (1.0–2.0mm) and stainless steel 304 (1.0–1.5mm). Custom sizes up to 1500×4000mm. LED control via DALI, DMX512, 0-10V dimming with colour temperatures from 2700K to 6500K including full RGB options. Ideal for hotel lobbies, brand walls, retail feature displays, and commercial reception areas.

2. Technical Specifications

Product Name	Backlit Wall Panel System	Ballesta® BWP Series
Panel Material	Aluminum AA1100 / AA3003; Stainless Steel 304	1.0–2.0mm (Al); 1.0–1.5mm (SS)
Panel Sizes	Custom up to 1500mm × 4000mm	Per project specification
Light Source	LED strips (12V/24V/48V), LED modules, edge-lit LGP	High CRI >90
Illumination Methods	Edge-lit, direct backlit, perforated-through	Three methods available
Colour Temperature	2700K / 3000K / 4000K / 6500K, tunable white	All standard CCTs
Colour Options	Single colour, tunable white, full RGB, RGBW, RGB+CCT	Any colour available

Dimming & Control	0-10V, DALI (DT8 colour), PWM, DMX512	Multiple protocols
System Depth	Edge-lit: 15–25mm; Direct backlit: 60–120mm; Perf-through: 50–100mm	Varies by method
Typical Lumen Output	Edge-lit: 150–300 cd/m ² ; Direct: 300–500+ cd/m ²	Per design
IP Rating	IP20 (interior); IP54 (protected exterior)	Per location
LED Lifespan	50,000+ hours (L70)	High reliability
Power Supply	Constant voltage driver with emergency backup option	Included
Surface Finish	Powder coating (RAL/BS) / PVDF (Kynar 500) / Anodized / Wood grain / Brushed	All finishes
Fire Classification	Class A – non-combustible metal panels	LED/driver components UL/CE certified
Certification	ISO 9001:2015 / ISO 14001:2015	SISA certified
Density	2.70 g/cm ³	ASTM D792

3. Manufacturing Process

3.1 Aluminum Substrate Cutting:

Precision cutting of 3003/5005 series aluminum sheet into 300mm×3750mm size with 0.7mm thickness, ensuring dimensional tolerance (Length±2mm, Width±1mm, Thickness±0.03mm).

3.2 Surface Pretreatment:

Degreasing and dust removal treatment on aluminum substrate surface to enhance the adhesion between UV ink and substrate, and improve the overall corrosion resistance of the panel.

3.3 UV Printing

Coating environmentally friendly UV ink on the pretreated substrate, precisely controlling ink dosage, printing speed and curing time. The ink is cured by UV technology to form a uniform and firm coating ($\geq 60\mu\text{m}$), and the matte surface gloss is adjusted to 15-25°. Custom texture (wood grain/stone grain) can be printed according to customer requirements with high restoration degree.

3.4 Forming & Splicing Processing

Edge folding treatment of the panel with precise control of fold angle ($90^\circ \pm 1^\circ$) and consistent fold width, no visible cracks/distortions at the folds. Seamless splicing design is adopted, and the joint is reinforced by intermittent welding or structural adhesive to ensure structural stability.

3.5 Post-Processing:

Edge trimming, deburring and flatness calibration of the panel. Multi-point testing of surface gloss, color difference and thickness by professional equipment to ensure all indicators meet the standard.

3.6 Installation Accessory Matching:

Configure special hangers for ceiling installation; steel support frames or counter supports are equipped for hangers longer than 1.5m to enhance the stability of the suspension system.

4. Application Scope

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

- Indoor ceilings, interior walls, column cladding and ground decoration (special anti-slip customization)
- Exterior facades of commercial buildings, office buildings and residential buildings
- Decoration of public places such as shopping malls, hotels, airports and subway stations
- Customized decoration projects requiring Grade A fire resistance, seamless splicing and matte effect
- Decoration in harsh environments such as high temperature ($\leq 70^\circ\text{C}$), high humidity ($\text{RH} \geq 95\%$) and 5% salt spray concentration

5. Compliance Standards

- **YS/T429.1:** Aluminum Curtain Wall Panels - Part 1
- **YS/T429.2:** Aluminum Curtain Wall Panels - Part 2
- **GB/T3190-2020:** Chemical Composition of Wrought Aluminum and Aluminum Alloys
- **GB/T3880:** Aluminium and Aluminium Alloy Plates and Sheets for General Industrial Use
- **National Fire Resistance Standard for Building Materials** (Grade A combustion performance)
- **ASTM D1186:** Standard Test Method for Thickness of Organic Coatings
- **ASTM D3359:** Standard Test Methods for Measuring Adhesion by Tape Test

- **AAMA 501.6:** Standard Practice for Installation of Exterior Wall Cladding Panels

6. Packaging & Storage

Packaging: Each panel is covered with PE film to prevent scratches, then packed in wooden crates with foam padding to avoid collision and deformation during transportation. The folding edge and splicing part are protected by special anti-collision accessories.

Storage: · Store in a dry, ventilated and rainproof warehouse, avoid direct sunlight, high temperature ($>70^{\circ}\text{C}$) and high humidity ($\text{RH}>95\%$) environment.

- Avoid contact with sharp objects, chemicals and corrosive substances to prevent surface damage and substrate corrosion.
- 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 fire-resistant materials.

7. Quality Assurance

All panels undergo strict multi-item quality inspection before delivery, including dimensional tolerance, thickness error, surface gloss, color difference, flatness, coating adhesion, wear resistance and fire resistance test.

We provide a warranty period of not less than 15 years for the product (under normal use conditions and compliance with installation and storage requirements). Within the warranty period, the UV printing coating shall have no obvious fading, peeling, cracking and color loss; the aluminum substrate shall have no corrosion, deformation and other defects, and the splicing part shall remain stable and firm.
