

1. Product Overview

1.1 Product Identifier

Perforated Acoustic Ceiling

PAC-1000

Ballesta Perforated Acoustic Ceiling System is a comprehensive collection of metal ceiling solutions with precision perforation and acoustic fleece backing for superior sound absorption. Almost every Ballesta ceiling system – strip, lay-in, clip-in, open cell, mesh, hook-on, and tubular – can be precision-perforated and fitted with acoustic backing. Standard round holes in staggered arrangement (1.5mm, 2mm, 2.5mm, 3mm diameters) with open areas from 8% to 23%. Micro-perforated options (0.8–1.0mm) provide acoustic absorption while maintaining a smooth, unperforated appearance. Acoustic fleece is heat-bonded to the reverse side achieving NRC ratings up to 0.95.

2. Technical Specifications

Product Name	Perforated Acoustic Ceiling System	Ballesta® PAC / Hushtal Series
System Types	Strip, lay-in, clip-in, hook-on, open cell, mesh, tubular	All Ballesta ceiling platforms
Perforation Pattern	Round holes in staggered arrangement	Standard configuration
Hole Diameters	1.5mm, 2.0mm, 2.5mm, 3.0mm	Custom patterns available
Micro-Perforation	0.8–1.0mm diameter (nearly invisible from normal viewing distance)	Optional ultra-fine holes
Open Area (perforated)	8–23% depending on hole diameter and pitch	Standard range
Acoustic Backing	Black acoustic fleece –	Standard; micro-perf also

	heat-bonded to reverse side	available
NRC Rating	Up to 0.95 (with acoustic fleece + 50mm air gap)	Per ISO 11654 / ASTM C423
Sound Absorption Class	Class A per ISO 11654	Highest absorption class
Base Material	AA1100 / AA3003 aluminum alloy	H14 / H16 temper
Panel Thickness	0.5–1.0mm (varies by system type)	Per system specification
Surface Finish	Powder coating / PVDF fluorocarbon / Anodizing	All RAL colours
Fire Classification	Class A – non-combustible	ASTM E84 / EN 13501-1 A2-s1,d0
Applications	Auditoriums, offices, airports, concert halls, lecture theatres, open-plan spaces, hotels	Sound-critical spaces
Installation	Standard per base ceiling system	No special acoustic tools required
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.
