

## 1. Product Overview

### 1.1 Product Identifier

Product Name: Ballesta® Acoustic Baffle Systems

Product Code: TDS-ACB-001

Description: Ballesta Acoustic Baffle Systems are suspended aluminum baffles with U/V-shaped profiles featuring internal cavities designed for acoustic noise control. Available in four types — BV-Type (V-bottomed), Omega-Type (rounded), U-Type (square-bottomed), and VH-Type (deep V-shaped) — each can be precision-perforated, fitted with acoustic fleece backing, or cavity-filled with sound-absorbing material to achieve NRC up to 0.90+. Designed for open-ceiling environments including offices, airports, atriums, auditoriums, and transit spaces.

## 2. Technical Specifications

| Item                        | Specification                                                                             | Test Standard             |
|-----------------------------|-------------------------------------------------------------------------------------------|---------------------------|
| Aluminum Substrate Material | Indoor: AA 3003 (H24 Temper)<br>Outdoor: AA 3003 (H24/H26)                                | GB/T 3190, YS/T 429.1     |
| Baffle Types                | BV-Type (V-bottomed) /<br>Omega-Type (Rounded) /<br>U-Type (Square) / VH-Type<br>(Deep V) | ISO 128, Customer Drawing |
| Panel Thickness             | 0.8mm – 1.2mm (Standard)<br>Up to 2.0mm (Deep Profiles)<br>Tolerance: $\pm 0.03$ mm       | ASTM B209, YS/T 429.1     |
| Baffle Heights              | BV: 50–250mm / Omega:<br>50–200mm / U: 50–300mm /<br>VH: 100–400mm                        | Per Profile Specification |
| Standard Lengths            | 1,000mm – 6,000mm (Custom<br>lengths available)                                           | YS/T 429.1, ISO 2768      |

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|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Perforation Options     | Round holes: 0.8mm (micro),<br>1.8mm, 2.0mm, 2.5mm,<br>3.0mm<br>Open area: 3–28%<br>Staggered pattern. Single or<br>double side.                 | ASTM C423, Customer Spec  |
| Acoustic Fleece Backing | Heat-bonded black acoustic<br>fleece (perforated face)<br>NRC: 0.50–0.65 (single) /<br>0.65–0.80 (double)                                        | ASTM C423, ASTM E795      |
| Cavity Filling          | Fiberglass (24kg/m <sup>3</sup> ) or Mineral<br>Wool (48kg/m <sup>3</sup> )<br>NRC Boost: +0.15 to +0.30<br>Wrapped in acoustic fabric           | ASTM C423                 |
| Surface Finish          | Polyester powder coating<br>(RAL/Pantone)<br>PVDF fluorocarbon (Kynar<br>500®)<br>Anodizing (Natural,<br>Champagne, Bronze, Black)               | AAMA 2603 / 2604 / 2605   |
| Color Options           | Full RAL color chart; standard<br>RAL 9003, RAL 9006<br>Custom colors per Pantone<br>reference<br>Dual-color (different<br>inside/outside faces) | ASTM D2244, ISO 7724-1    |
| Suspension System       | Concealed aluminum carrier<br>track<br>Adjustable aircraft cable<br>(galvanized steel)<br>Surface-mount bracket options<br>available             | AAMA 501.6, Customer Spec |

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|--------------------------|----------------------------------------------------------------------------------------------|-----------------------------|
| Fire Rating              | Class A (Non-combustible)<br>Aluminum + fleece + filling all<br>fire-rated<br>No toxic fumes | ASTM E84, EN 13501-1        |
| Baffle Spacing           | Standard: 100–200mm gap<br>between baffles<br>Custom spacing for acoustic<br>targeting       | Acoustic Design Calculation |
| Weight                   | Approx. 2.0 – 4.5 kg/m (profile<br>and thickness dependent)                                  | ASTM D792                   |
| Warranty                 | 10 years (standard indoor<br>application)<br>Extended warranty available on<br>request       | Per Sales Agreement         |
| Environmental Compliance | RoHS compliant / Fully<br>recyclable aluminum<br>ISO 9001 certified<br>manufacturing         | RoHS Directive, ISO 9001    |

### 3. Manufacturing Process

#### 3.1 Aluminum Substrate Cutting:

Precision cutting of AA3003 series aluminum sheets into specified baffle blanks per profile type (BV, Omega, U, VH). Length up to 6,000mm. Thickness 0.8mm–1.2mm standard. Burr-free edges ensured.

#### 3.2 Surface Pretreatment:

Degreasing, chemical etching and chromate conversion coating to enhance paint adhesion and corrosion resistance. Consistent surface preparation across all baffle faces.

#### 3.3 Perforation (Acoustic Option):

CNC-controlled precision perforation of baffle faces. Standard round holes: 0.8mm (micro) to 3.0mm diameter. Staggered pattern. Single-side or double-side perforation available. Open area 3–28%. Custom patterns available.

#### 3.4 Profile Forming:

Roll-forming or press-brake bending into the required U/V profile. Consistent bend angles ( $\pm 1^\circ$ ), uniform cavity depth. BV: V-bottomed. Omega: curved sides. U: square-bottomed. VH: deep V-profile.

### 3.5 Acoustic Filling & Finishing:

Application of acoustic fleece backing (heat-bonded to perforated faces). Optional cavity filling with fiberglass (24kg/m<sup>3</sup>) or mineral wool (48kg/m<sup>3</sup>). Filler wrapped in acoustic fabric. Final PVDF/powder coating or anodizing applied.

### 3.6 Quality Inspection & Packaging:

Dimensional tolerance check, acoustic fleece adhesion test, coating thickness verification, and packaging with protective interleaving. Each baffle individually wrapped before crating.

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## 4. Application Scope

These acoustic baffle systems are widely used in open-ceiling environments requiring noise control, including but not limited to:

- Open-plan offices, co-working spaces and corporate headquarters requiring speech privacy and reduced reverberation
- Airport terminals, railway stations and transit halls with high ceilings and hard reflective surfaces
- Atriums, lobbies and shopping malls where both aesthetics and acoustics are critical
- Auditoriums, lecture halls, gymnasiums and sports facilities needing targeted sound control
- Restaurants, hotels, conference centers and recording studios requiring low background noise levels

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## 5. Compliance Standards

- **ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials (Class A)**
- **EN 13501-1: Fire Classification of Construction Products and Building Elements (Class A)**
- **ASTM C423: Standard Test Method for Sound Absorption and NRC (Noise Reduction Coefficient)**
- **ASTM E795: Standard Practices for Mounting Test Specimens During Sound Absorption Tests**
- **GB/T 3190-2020: Chemical Composition of Wrought Aluminum and Aluminum Alloys**
- **YS/T 429.1: Aluminum Curtain Wall Panels - Quality Standards**
- **ASTM B209: Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate**
- **ISO 9001: Quality Management Systems (Certified Manufacturing Facility)**

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## 6. Packaging & Storage

**Packaging:** Each baffle is wrapped with PE protective film to prevent surface scratches during transport and handling. Packed in reinforced wooden crates with foam cushioning. Suitable for sea freight and long-distance transport.

**Storage:** Store in a dry, ventilated and rainproof warehouse. Avoid direct sunlight,

**high temperature and humidity. Maintain ambient temperature below 40°C.**

Avoid contact with sharp objects, chemicals and corrosive substances to prevent surface damage and coating degradation.

Stacking height shall not exceed 5 layers of crates to prevent deformation of lower baffles due to excessive pressure.

Keep away from fire sources during storage. Meet Grade A fire safety requirements for storage environments.

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## **7. Quality Assurance**

All acoustic baffles undergo strict multi-item quality inspection before delivery, including dimensional tolerance ( $\pm 1\text{mm}$ ), perforation pattern accuracy, acoustic fleece adhesion strength, coating thickness and color consistency per approved samples.

We provide a warranty period of not less than 10 years for the product (under normal indoor use conditions). Extended warranty available upon request. Full traceability via batch number on each crate.

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