1. Product Overview

1.1 Product Identifier

Product Name: Ballesta® 50mm Tubular Ceiling System
Product Code: [Customizable, e.g., TC-50-6000-1.0]
The Ballesta 50mm tubular ceiling system consists of precision-extruded aluminum round tubes (Alloy 6063-T5) suspended on dedicated carrier channels, creating a clean, rhythmic linear ceiling plane with open gaps between tubes. Standard tube diameter is 50mm with 1.0mm wall thickness. Installation spacing is 100mm or 150mm center-to-center. Dedicated carrier channels are available in 1.0mm or 2.0mm thickness, selected by suspension span requirements. Each tube is fitted with injection-molded plastic end caps spray-painted to match the tube color. The open design allows natural airflow, integrated LED lighting, and convenient access to overhead services.

2. Technical Specifications

Aluminum Substrate Material	Alloy 6063-T5 (precision extruded) Temper: T5	GB/T 5237, GB/T 3190
Tube Diameter	50mm (outer diameter) Tolerance: +/- 0.2mm	GB/T 5237, ISO 128
Wall Thickness	1.0mm (standard) Tolerance: +/- 0.05mm	GB/T 5237, ASTM B221
Maximum Tube Length	6,000mm (custom lengths available) Tolerance: +/- 2mm	ISO 128
Installation Spacing (C-C)	100mm or 150mm (center-to-center) Gap: ~50mm or ~100mm	Project-specific

Carrier System	Dedicated carrier channels Thickness: 1.0mm or 2.0mm	GB/T 5237
End Caps	Injection-molded plastic Color-matched spray painting	Custom specification
Surface Finish	PVDF (Kynar 500): 25-35μm Powder coating: 60-80μm Anodized: 10-15μm	AAMA 2605 (PVDF) AAMA 2604 (Powder) AAMA 611 (Anodized)
Gloss Level	15-30% (matte) 30-70% (semi-gloss/satin) 70-90% (high-gloss)	ISO 2813, ASTM D523
Color Tolerance	ΔE*ab < 1.0 (PVDF) ΔE*ab < 1.5 (Powder)	ISO 7724-1, ASTM D2244
Pencil Hardness	HB (PVDF) H-2H (Powder coating)	ASTM D3363
Impact Resistance	No cracking at 50 in-lb (direct/reverse)	ASTM D2794
Adhesion	No removal (5B classification)	ASTM D3359 (Cross-cut)
Salt Spray Resistance	> 1,000 hours (PVDF) > 500 hours (Powder)	ASTM B117
Fire Rating	Class A - Non-combustible Flame Spread < 25 Smoke Developed < 50	ASTM E84, BS 476
Acoustic Performance	Open ceiling - natural sound dissipation Acoustic infill available	ISO 354
Warranty	Up to 15 years (PVDF) Up to 10 years (Powder)	Ballesta Standard Warranty

3. Manufacturing Process

3.1 Aluminum Tube Extrusion:

High-quality 6063-T5 aluminum alloy is precision-extruded through a custom die to form 50mm outer diameter round tubes with 1.0mm wall thickness. Extrusion ensures consistent diameter tolerance (+/-0.2mm), wall thickness uniformity, and straightness across the full length. Maximum tube length: 6000mm.

3.2 Surface Pretreatment:

Degreasing and chemical pretreatment of tube surfaces to remove oxidation and contaminants, enhancing coating adhesion and overall corrosion resistance per ASTM B209.

3.3 Coating Application:

Application of PVDF (Kynar 500) fluorocarbon coating, polyester powder coating, or anodized finish. Coating thickness is precisely controlled (PVDF: 25-35μm; powder: 60-80μm) with consistent color matched to RAL or Pantone standards.

3.4 End Cap Injection Molding:

Injection-molded plastic end caps are produced to match the 50mm tube inner diameter. End caps undergo color-matching spray painting to achieve identical finish to the tube surface, ensuring a seamless visual appearance at tube ends.

3.5 Post-Processing:

Tube end deburring, surface quality inspection, and end cap fitting. Multi-point testing of gloss, color difference, and dimensional accuracy by professional equipment before packaging.

3.6 Installation Accessory Matching:

Configure dedicated carrier channels (1.0mm or 2.0mm thickness), suspension hangers, rods, M6 bolts, and connecting clips. Select carrier thickness based on suspension span requirements. For hanger lengths exceeding 1.5m, supplementary bracing is provided.

4. Application Scope

This 50mm tubular ceiling system is widely used in architectural ceiling decoration, including but not limited to:

- Airport terminals, train stations and metro systems where linear ceiling aesthetics guide passenger flow
- Commercial building lobbies, hotel atriums and shopping mall corridors
- Convention centers, exhibition halls and large public spaces
- Covered walkways, parking garages and transit platform canopies (with PVDF finish for semi-exterior use)
- Architectural projects requiring Grade A fire resistance, open ceiling design, and integration with LED lighting and MEP systems

5. Compliance Standards

- GB/T 5237-2017: Wrought Aluminum Alloy Extruded Profiles for Architecture
- GB/T 3190-2020: Chemical Composition of Wrought Aluminum and Aluminum Alloys
- GB/T 3880: Aluminium and Aluminium Alloy Plates and Sheets for General Industrial Use
- National Fire Resistance Standard for Building Materials (Grade A combustion performance)

- ASTM B209: Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
- ASTM D7091: Standard Practice for Nondestructive Measurement of Dry Film Thickness
- ASTM D3359: Standard Test Methods for Measuring Adhesion by Tape Test
- ISO 354: Acoustics — Measurement of Sound Absorption in a Reverberation Room

6. Packaging & Storage

Packaging: Each tube is wrapped with protective film, then packed in bundles with foam padding and secured with strapping. End caps are pre-installed or provided in separate sealed bags. For export shipments, plywood crates with foam inserts are used.

Storage: · Store in a dry, ventilated and rainproof warehouse. Avoid direct sunlight, high temperature (>70℃) and high humidity (RH>95%) environments.

· Avoid contact with sharp objects, chemicals and corrosive substances to prevent surface damage and substrate corrosion.

· Tube bundles shall be stored horizontally on level pallets. Stacking height shall not exceed 3 layers to prevent deformation.

· 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 tubular ceiling products undergo strict multi-item quality inspection before delivery, including dimensional tolerance, wall thickness, coating thickness, color difference (ΔE*ab < 1.5), gloss measurement, and end cap fitment. Inspection reports are provided with each shipment.

We provide a warranty period of not less than 15 years for PVDF-coated products and 10 years for powder-coated products (under normal use conditions and compliance with installation and storage requirements).