

1. Product Overview

1.1 Product Identifier

Product Name: Ballesta® Lay-Flat Mesh Ceiling

Product Code: LF-MESH-40x40-1.5mm

Description: Ballesta Lay-Flat Mesh Ceiling is a frame-supported metal mesh system. Aluminum main and cross tees (40x40mm, 1.5mm wall thickness) are joined to form rectangular load-bearing frames. Woven wire or expanded metal mesh inserts (1.5mm thick) are placed inside the frame cavity. Standard module sizes: 800x1500mm, 900x1500mm, 1000x1000mm, 1000x1600mm. Frame is finished with durable spray coating (RAL colors available). Ideal for airports, metro stations, shopping malls, and other high-traffic public spaces where a distinctive visible-grid aesthetic and natural airflow are desired.

2. Technical Specifications

Item	Specification	Test Standard
Aluminum Substrate Material	AA 3003 / AA 5005 (H24 Temper)	GB/T3190-2020, GB/T3880
Frame Profile Size	40mm (W) x 40mm (H)	JG/T 450, ISO 2768
Frame Wall Thickness	1.5 mm (±0.1mm)	JG/T 450, ASTM B209
Mesh Thickness	1.5 mm (wire/sheet)	ASTM B209
Mesh Type	Woven Wire / Expanded Metal / Perforated	Customizable per project
Standard Module Sizes	800x1500 / 900x1500 / 1000x1000 / 1000x1600mm	ISO 128
Surface Finish	Spray Coating (Powder or PVDF)	JG/T 450, ASTM D3359
Coating Thickness	60-80 µm	ASTM D7091

Frame Color	Custom RAL color ($\Delta E^*_{ab} \leq 1.5$)	ISO 7724-1
Fire Resistance Rating	Grade A (non-combustible, ASTM E84)	GB 8624, ASTM E84
Flatness	≤ 1.5 mm/m	JG/T 450
Suspension System	Adjustable hanger rod + fasteners	JG/T 450
Corrosion Resistance	Salt spray ≥ 1000 h (ASTM B117)	ASTM B117
Tensile Strength	AA 3003: 145-180 / AA 5005: 145-185 MPa	GB/T3880, ASTM E8
Density	2.70 g/cm ³	ASTM D792
Acoustic Performance	Up to NRC 0.80 (with acoustic backing)	ISO 354, ASTM C423

3. Manufacturing Process

3.1 Frame Extrusion & Cutting:

Aluminum alloy (AA3003/AA5005) is extruded into 40x40mm tee profiles with 1.5mm wall thickness. Profiles are precision-cut to specified module lengths (800-1600mm) with clean, burr-free ends for accurate joint assembly.

3.2 Surface Pretreatment:

Degreasing and chemical pretreatment of aluminum profiles to remove surface oxides and contaminants. Ensures maximum adhesion of the spray coating finish.

3.3 Spray Coating:3 UV Printing

Application of polyester powder or PVDF spray coating in controlled environment. Uniform coverage at specified thickness (60-80 μ m). Any RAL color available. Cured at high temperature for maximum durability and color stability.

3.4 Mesh Manufacturing:4 Forming & Splicing Processing

Woven wire mesh: precision weaving of aluminum or stainless steel wires to specified opening size and pattern. Expanded metal mesh: simultaneous slitting and stretching of metal sheet to form diamond-shaped openings. Both types trimmed to exact module dimensions with 1.5mm wire/sheet thickness.

3.5 Frame Assembly Jigging:5 Post-Processing:

Main tees and cross tees are assembled using frame connectors at each intersection. Jig fixtures ensure squareness within $\pm 1\text{mm}$ and consistent 40mm frame alignment. All joints are secured with bolts for structural rigidity.

3.6 Installation Accessory Matching:6 Installation Accessory Matching:

Complete suspension kit supplied including: hanger rods, hanger fasteners, frame connectors, and bolts. All accessories are corrosion-resistant and compatible with standard ceiling suspension grid layouts.

4. Application Scope

This Lay-Flat Mesh Ceiling system is widely used in architectural decoration fields, including but not limited to:

- Airport terminals, metro stations and railway concourses requiring durable, high-traffic ceiling surfaces
- Shopping malls, hotel lobbies and exhibition centers needing distinctive architectural aesthetics
- Office atriums, commercial building lobbies and parking garages
- Industrial spaces, convention halls and sports venues requiring natural airflow ceiling systems
- Projects requiring visible structural grid aesthetics with open ceiling design

5. Compliance Standards

- **GB/T 23444: Metal and Metal-Composite Ceilings**Aluminum Curtain Wall Panels - Part 1
- **JG/T 450: Aluminum Alloy Ceilings**Aluminum Curtain Wall Panels - Part 2
- **GB/T3190-2020: Chemical Composition of Wrought Aluminum and Aluminum Alloys**Chemical Composition of Wrought Aluminum and Aluminum Alloys
- **GB/T3880: Aluminium and Aluminium Alloy Plates and Sheets for General Industrial Use**Aluminium and Aluminium Alloy Plates and Sheets for General Industrial Use
- **National Fire Resistance Standard for Building Materials (Grade A combustion performance)** (Grade A combustion performance)
- **ASTM B209: Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate**Standard Test Method for Thickness of Organic Coatings
- **ASTM D3359: Standard Test Methods for Measuring Adhesion by Tape Test**Standard Test Methods for Measuring Adhesion by Tape Test
- **ISO 354: Measurement of Sound Absorption in Reverberation Rooms (acoustic performance)**Standard Practice for Installation of Exterior Wall Cladding Panels

6. Packaging & Storage

Packaging: Frame profiles are bundled and secured with strapping, wrapped in protective film. Mesh panels are interleaved with protective paper and packed in plywood crates. All components labeled with module size, quantity and project reference.

Storage: · Store in a dry, ventilated and rainproof warehouse, avoid direct sunlight, high temperature and humid environments.

- Avoid contact with sharp objects, chemicals and corrosive substances to prevent surface damage and coating deterioration.
- Frame bundles shall be stored horizontally on wooden pallets. Mesh panels shall be stored flat, stacking height shall not exceed 5 layers to prevent deformation.
- The storage site shall be far away from fire sources to meet the fire safety requirements of Grade A non-combustible materials.

7. Quality Assurance

All Lay-Flat Mesh components undergo strict multi-item quality inspection before delivery, including: frame dimensional accuracy ($\pm 1\text{mm}$), mesh opening consistency, coating thickness and adhesion, color uniformity, flatness ($\leq 1.5\text{mm/m}$), and assembly fit verification. Each batch is tested to meet the applicable standards listed in Section 5. We provide a warranty period of not less than 15 years for the product (under normal use conditions and compliance with installation and maintenance guidelines).
