

MATTERGUARD

PRODUCT CODE: MG-DR

DRY ROOMS

MatterGuard Dry Rooms are self-supported containment systems that feature specialized HVAC systems to maintain low humidity levels and climates as low as -80° C while complying with ISO cleanroom standards. They feature coated panel surfaces for moisture prevention and resistance.



FEATURES OVERVIEW

- Self-supporting structural steel frame.
- Ultra-hygienic GRP high-impact composite door systems.
- Hermetic dual-barrier vapor seal.
- Bow-resistant aluminum composite tiled ceiling.
- Direct-ducted fan filter units.
- Ultra-pure PVDF surface technology.
- Continuous flush-glazed surfaces.
- Electrostatic control and rapid dissipation.
- Epoxy ESD flooring systems.

OPTIONS

Fan Filter Unit (FFU) Systems

- (A) Premium Gel-Seal FFUs (*Dynamic-Flow GS Series*)
- (B) Standard Gasket-Seal FFUs (*Standard-Flow Series*)

Sealed Room-Side Electrical & Data Pathways

- (A) Isolated Dual Channel (*High-Capacity Multi-Service*)
- (B) Divided Low-Profile (*Compact Multi-Service*)



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HIGH-PERFORMANCE ENVIRONMENTAL CONTROL

MatterGuard Dry Room Systems are engineered to achieve and maintain ultra-low humidity environments with dew points as low as -80°C , supporting advanced manufacturing processes such as lithium-ion battery production and precision electronics.

The system integrates direct-ducted airflow delivery, high-efficiency filtration, and a sealed enclosure architecture to ensure consistent environmental stability, pressure control, and particulate containment.

A fully integrated MatterLogic monitoring platform provides real-time environmental tracking, predictive maintenance diagnostics, and seamless connectivity to facility Building Management Systems (BMS).

ADVANCED MATERIALS AND PANEL TECHNOLOGY

The MatterGuard enclosure utilizes high-performance insulated panel systems engineered for structural integrity, vapor containment, and long-term durability.

- Closed-cell PIR insulation core for thermal stability and moisture resistance.
- Heavy-gauge steel facings with protective AZ50 coating
- Premium PVDF fluoropolymer finish for ultra-low outgassing and chemical resistance
- Resistance to IPA, VHP sterilization, and aggressive cleaning compounds

Unlike traditional PVC or uPVC materials, PVDF surfaces maintain long-term performance under UV exposure, thermal cycling, and continuous cleanroom operation.

PERFORMANCE TARGETS

- Dew Point: as low as -80°C continuous operation
- Cleanroom Classification: ISO Class 4–9
- Pressure Control: $+0.05$ to $+0.10$ in. w.g.
- ESD Performance: 10^6 – 10^9 ohms/sq



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CUSTOM FABRICATED TO PROJECT SPECIFICATION

WALL PANELS & CORE CONSTRUCTION

Panel core thickness: 2.00" – 4.00"
Core material: Closed-cell polyisocyanurate (PIR)
Steel facings: 24-gauge or 26-gauge structural steel

GLAZING / VISION PANELS

Glass thickness (per pane): 6 mm toughened safety glass
Construction: Double-glazed (two-pane system)

CEILING TILE SYSTEM (ACM PANELS)

Tile thickness: 2 mm – 8 mm (standard: 6 mm)
Standard tile sizes:
- 2' x 4' (23 13/16" x 47 13/16")
- 2' x 2' (23 13/16" x 23 13/16")
Aluminum facer thickness: 0.008" (0.2 mm)

CEILING GRID SYSTEM

Standard-duty grid: 1.5" wide gasketed tee profile
Heavy-duty grid: 2.0" structural gasket-seal profile

FLOORING & COVE BASE

Cove base height: 4" (100–150 mm range)
Cove radius: 1" (25 mm)

STRUCTURAL FRAMEWORK

Steel tubing: ASTM A500 structural profiles (custom-sized)
Structural beams: Wide flange ASTM A992 Grade 50

DOOR SYSTEMS

Door leaf thickness: 1.5" – 1.75"
Frame material thickness: ~1.6 mm stainless steel

ELECTRICAL RACEWAY PROFILES

High-capacity system: ~2 1/4" deep x 6" wide
Compact system: ~1 7/8" deep x 2 7/8" wide

INDUSTRY STANDARDS & COMPLIANCE

- ISO 14644 Certification – Cleanroom performance validated for operation within ISO Class 4 through ISO Class 9 environments.
- ANSI/ESD S20.20 Compliance – Electrostatic control system designed to meet industry requirements for ESD-sensitive environments.
- ANSI/ESD S5.1 Surface Resistivity – Static dissipative flooring maintains 10^6 – 10^9 ohms/sq range.
- ANSI/ESD STM9.2 (Body Voltage Generation) – Limits human body voltage accumulation to $\leq 100V$.
- ASTM F150 Electrical Resistance Testing – Verified ESD floor system performance and conductivity.
- ASTM F3010 Moisture Vapor Emission Control – Epoxy moisture vapor barrier system protects against high moisture vapor transmission rates (MVT) to prevent under-slab vapor from breaching the cleanroom envelope.
- ASTM E84 Fire Performance (Class A) – Ceiling materials meet flame spread and smoke development requirements.
- UL 94V-0 Flammability Rating – Ceiling components designed with self-extinguishing materials.
- ISO 14644-14 Equipment Suitability – Lighting and components verified for cleanroom compatibility and non-shedding performance.
- FTMS 101C / Method 4046 – Electrostatic decay performance validated for rapid charge dissipation.