

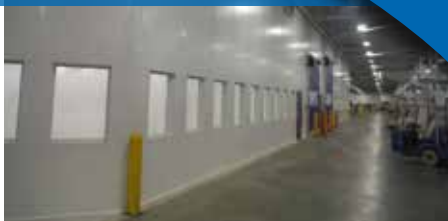
Healthcare Linen Laundry Room



QC Inspection Room



Automotive Component Manu



Pharmaceutical Packaging Room



Dry Room



Cannabis Grow Room



Compounding Pharmacy



Laboratory



CMM Room



Medical Device Packaging Room



Equipment Enclosure



We have supplied modular enclosures for construction of clean environmental systems for over 40 years. Our customers include a variety of manufacturers, health care facilities, universities, military and other government agencies. System designs vary depending on the specific processes the enclosures support. These structures can be classified into three different categories.

**CLEAN ROOMS:** Are enclosed spaces created to support manufacturing processes that must be done with limited exposure to contamination. The level of cleanliness will vary depending upon the standards established for the specified manufacturing process. The level of cleanliness also determines the design criteria necessary to achieve the desired results. This requires filtration of air, along with humidity and temperature control. Standards identified by classifications have been established in accordance with ISO and Federal Standard 209E guidelines. Third party certification along with operational protocols are common for these applications.

**Applications include:**

- Compounding Pharmacies
- Electronic Component Manufacturing
- Healthcare Linen Cleaning
- Isolation Rooms
- Wafer Chip Production
- Pharmaceutical Packaging Rooms
- ...and more

**CLEAN ENVIRONMENTS:** Not every manufacturing process requires the stringent contamination control required for a certified clean room or the humidity and temperature control of an E-room. For these applications our modular systems can be used to create separate environments that are cleaner than other areas within the facility.

**Applications Include:**

- Aerospace & Automotive Component Manufacturing
- QC Inspection Rooms
- Control Rooms
- Equipment & Machine Enclosures
- ...and more

**ENVIRONMENTAL ROOMS** are like cleanrooms in that a controlled environment is created to support a specific manufacturing process. The process requires precise control over temperature and humidity levels to ensure the desired outcome of the product being produced.

**Applications include:**

- CMM Rooms
- Cannabis & Other Vertical Farming
- Dry Rooms
- Powder Paint Enclosures
- 3D Printer Enclosures
- Data Centers
- Laboratories
- ...and more

ENGINEERED SOLUTIONS

**On-Site Support:** Nationwide network of clean room contractors along with Porta-King regional sales managers to support turnkey design and construction of your project.

**Speed of Construction:** Faster construction than would be possible by any conventional methods to accelerate completion of your construction.

**Cleaner Construction:** Prefabricated and prefinished components minimize on-site cutting of material for a much cleaner build.

**Flexible Design:** Our flexible designs make it easy to move, modify or expand with a 100% recapture of your initial material investment.

**Cost Effective:** Potential tax saving as modular construction can be categorized as capital equipment.

Your choice of non-shedding anodized aluminum or powder coated finish to ensure optimal performance of the cleanroom filtration system.

1 3/4" Versa-King



This economical thinner profile is perfect for furring wall applications or to create laminar airflow chase, return walls and column wraps.

3" Versa-King



Our most popular clean room framing system. The multi-purpose, 3-piece post connector serves not only to secure wall panels together but also as a wiring chase and structural column to support the roof and ceiling system.

6" VK HD



This 6" thick version of the Versa-King framing system is ideally suited for cleanroom applications where an extra tall ceiling clearance is required. Like all Versa-King systems post connections utilize a non-progressive design to facilitate easy removal of a one or a series of panels from anywhere within the wall system.

Wall Construction Designs

Framed Modular Wall Systems

Versa-King –Extruded aluminum posts enable tight control over dimensional tolerances to ensure superior fit and finish.

Wall sections are held in place with a 3-piece framing post.

These posts are installed between each wall section and serve as the structural support for the ceiling system as well as a vertical chase to conceal electrical and data lines.

The interior and exterior components of our connection post are designed to compress onto the wall surface to ensure an extra tight seal.

The unique design of the interior and exterior framing posts also facilitates a positive locking connection with window frame to eliminate movement and resist air leakage.

**Wall Finishes** – Providing the appropriate wall surface is critical to the performance of Cleanrooms and E-rooms. We offer a wide array of materials to address a wide range of operational requirements. Popular options include melamine, smooth FRP, PVC and painted steel. A variety of other surfaces are available to meet the functional demands of each unique application.

**Core Compositions** – A variety of materials can be included to accommodate insulation values, fire resistance and sound control. Solid insulating cores include polystyrene (EPS) or optional polyisocyanurate. Other compositions that address fire rating, sound control and other project specific requirements are available.

**Frameless Modular Wall Systems** - These systems utilize a tongue and groove side connection which eliminates the need for any vertical framing components. Light weight yet structurally strong and easy to maneuver. This design creates a flush wall surface with a clean, monolithic appearance. Available in 3"-8" panel thicknesses to address a broad range of application requirements. Panel heights up to 40'.).



**Monolith EPS** – Includes a solid expanded polystyrene core (UL Class 1 in accordance with ASTM E-84).

**Monolith Urethane** – Includes a foamed in place polyurethane core (UL Class 1 in accordance to UL 4880).

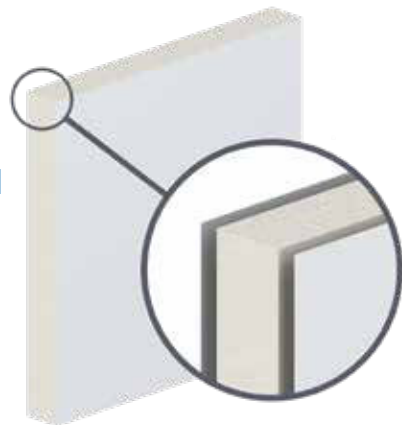
CLEANROOM STANDARDS

CLASS	maximum particles/m3						FED STD 209E equivalent
	>=0.1 um	>=0.2 um	>=0.3 um	>=0.5 um	>=1 um	>=05 um	
ISO 1	10	2					
ISO 2	100	24	10	4			
ISO 3	1,000	237	102	35	8		Class 1
ISO 4	10,000	2,370	1,020	352	83		Class 10
ISO 5	100,000	23,700	10,200	3,520	832	29	Class 100
ISO 6	1,000,000	237,000	102,000	35,200	8,320	293	Class 1,000
ISO 7				352,000	83,200	2,930	Class 10,000
ISO 8				3,520,000	832,000	29,300	Class 100,000
ISO 9				35,200,000	8,320,000	239,000	Room Air



## WALL COMPOSITIONS & FINISHES

**Painted Steel**



**Painted Steel** – Is economically priced, super durable finish, available in a variety of colors.

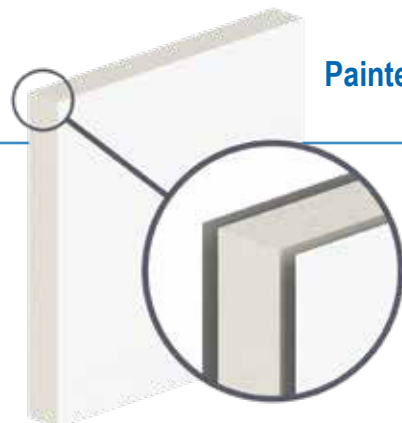
**Painted Aluminum** – Light weight, non-shedding and corrosion resistant material.

**PVC** - Creates a highly reflective surface that is scratch and chemical resistant.

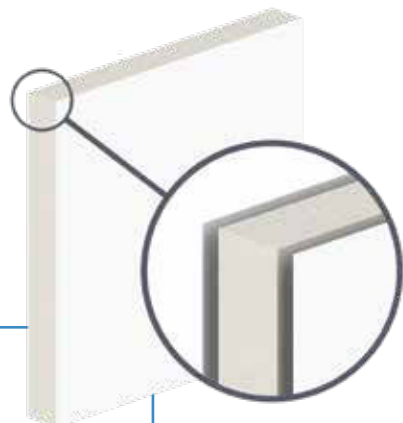
**Smooth FRP** - This heavy duty easy to clean material is also chemical and moisture resistant.

All these panel surfaces can be laminated directly to a Polystyrene (EPS) or Polyisocyanurate core. Drywall backing can also be added for enhanced sound control.

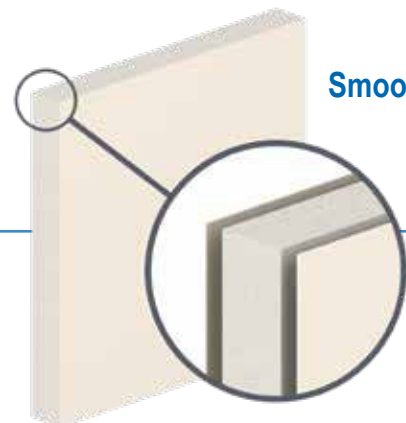
**Painted Aluminum**



**PVC**



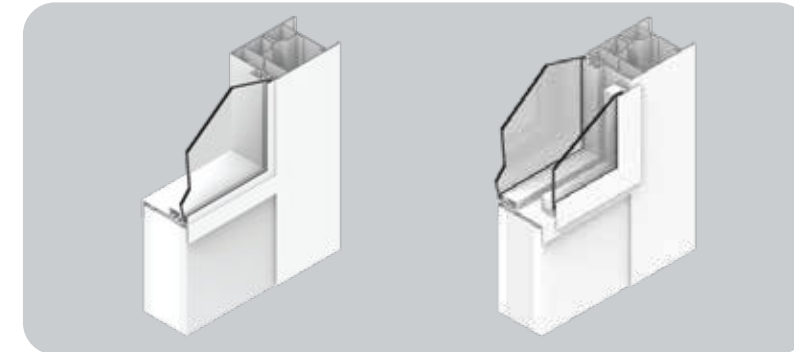
**Smooth FRP**



## COMPONENTS

Windows – Are an essential design feature in most cleanrooms and E-rooms. Our windows are designed to create a flush surface with our wall panels. In this detail you can see the frame of our window is designed to positively lock into the posts of our Versa-King framing system to create a tight seal that resists leakage.

**Single pane windows** are flush to one side to eliminate ledges where dust can collect. Our full perimeter glazing stops include a compression fit against the glazing surface to ensure a tight seal.



**Dual pane windows** are designed for use in common walls and are flush to each side of the wall panel surface.

## DOORS – ALLOW ACCESS FOR PERSONNEL, EQUIPMENT OR MANUFACTURED PARTS



**Single and Double Swing** – Anodized aluminum storefront type framing is light weight but extremely durable. Connecting posts are positively lock into each side of the integral door frame provide superior support for single or double door leaf designs. Doors can be prepped for a range of specialty hardware and security devices.

- Steel single and double swing doors are also available in a wide array of designs and special door hardware preps.



**Single / Bi-parting Automatic Sliding** – Help to maintain environmental conditions inside the enclosures. They can be set to operate automatically with motion sensors or via push button controls. They can also be equipped to operate with keypads or card readers for added security.

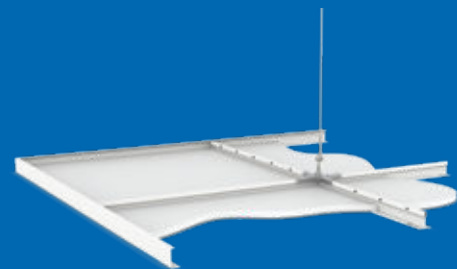


**Overhead** – A variety of overhead door designs can be supplied to accommodate transfer of larger material and equipment into and out of the enclosure. As a steel fabricator we can custom design any necessary support structure for integration into our wall system.

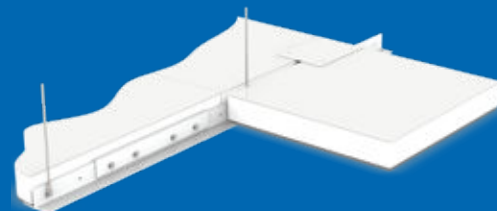
Clean room and environmental room ceiling systems can be designed in a variety of different ways depending on the application requirements.



**Suspended Ceiling System** – Can be supplied with our standard mineral board tiles or with optional non-shedding tile compositions that include Vinyl, FRP or PVC.



**Gasketed Suspended Ceiling System** - Are available with a variety of non-shedding ceiling tile design options that help seal the environment while creating a support mechanism for HEPA and ULPA filters and concealment of the associated duct work.



**Insulated Panel Ceiling System** – These large insulated panels offer an alternative to a traditional suspended ceiling system. Panels include a painted steel surface on both sides with either an EPS or Urethane insulating core. For larger spans a heavy-duty T grid is used to support the panels. The T grid is supported from the existing super structure with threaded rod. The roof panels can form the finished ceiling or can be used in conjunction with a secondary suspended ceiling for creation of a sealed plenum system.

## ACCESSORIES

**Air Showers** – To clean and decontaminate personnel, equipment and products prior to entering the controlled environment.

**Mezzanines** – We manufacture our own line of structural steel mezzanines. When cleanrooms and environmental rooms require a large clear span of the ceiling system, substantial storage loading capacity to support mechanical equipment, or both an integrated mezzanine provides a safe and effective and code compliant way to accommodate these design features.

**FFU (Fan Filter Units)** – Supplied with HEPA or ULPA filters are an essential component of clean room design. These units can be mounted into a cleanroom ceiling system to facilitate the filtration of particles from the recirculated air, or from surrounding air in a single pass design.

**Raised Access Floor Systems** – Are used to enhance laminar air flow from a filtered ceiling system directly down to the floor. They can also be used to conceal equipment, water lines and electrical wiring.



**Pass Through Cabinets** – Can be supplied for installation into our wall panels. They include swings doors on both sides to facilitate the clean transfer of material in or out of the controlled environment.

Return Air Chases



Cleanroom with PVC Wall Finish



Insulated Panel Ceiling System



Low Sidewall Return Air Chase Design

