Modular Architectural Cleanroom Systems

PORTAFAB

Modular Building Systems

The PortaFab Advantage

Experience

For over 40 years, PortaFab has been helping organizations with all of their Cleanroom and environmental control needs. Our staff of design consultants work with architects and general contractors to deliver functional and cost-effective solutions.

Comprehensive Product Line

With the industry's most complete line of architectural Cleanroom components, PortaFab provides unlimited design freedom without sacrificing functionality or value. The PortaFab line includes two distinct product lines with numerous components to ensure that you have the right products for your Cleanroom application. Various components of each wall system integrate with each other as well as a selection of windows, ceiling systems, and doors.

Worldwide Installation

Our commitment to maintaining the highest quality standards extends to our international network of specialized Cleanroom contractors. All of our contractors maintain the highest quality control programs to assure compliance with all critical standards. As independent contractors, they choose to work with PortaFab because our systems are the most cost-effective products for constructing quality Cleanrooms.

PORTAFAB
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Two Unique Systems

cleanLiNE™

Designed to meet the specifications of Cleanroom environments, CleanLine is an all-purpose system featuring 2", 3" and 4-5/8" thick wall systems that can utilize a wide variety of wall panels. This system can be used to outfit existing facilities or create freestanding envelope structures.

Features

- Unlimited Wall Panel Options
- In-Stud Wiring / Utility Raceways
- Heights Up to 24' Tall
- 2 Integrated Ceiling Options
- 4 Integrated Window Options
- Non-Progressive Construction

fabLiNE™

Designed primarily for the microelectronics and nanotech industries, FabLine systems are ideal for applications with significant bulkheading requirements or environments that require non-outgassing, non-shedding, and anti-static wall systems.

Features

- Extensive Bulkheading Flexibility
- Support for Process/Utilities
- Batten System for Interior Partitions
- Gasketing Options
- Anti-Static Wall Panels

Why Modular Construction?

While flexibility remains a key advantage, there are many reasons to consider modular construction over conventional construction.

Flexibility & Adaptability

Today's manufacturing facilities are being designed and constructed for maximum adaptability, and modular design accommodates this need for flexibility. Non-progressive construction with demountable walls allows the removal of individual wall panels without disturbing adjacent panels, flooring or ceiling. Modular systems can also be disassembled and relocated to quickly create or expand Cleanrooms, lowering the costs of expanding existing facilities.

Reduced Construction Time

Speed to market is critical for many manufacturing companies, and Modular Cleanrooms utilize a flexible design that allows for fast, easy installation. The integrated systems and ability to perform construction activities in parallel can reduce construction time by up to 40 percent and greatly reduce facility clean-up post construction. Using modular components also significantly reduces design, architecture, and engineering time and associated costs.

Minimized Disruption

Construction activities invariably result in jobsite disruption. Dust, increased personnel, and noise can all negatively affect any job site. Since Cleanroom wall panels are prefabricated and require little or no modification for installation, construction creates very little dust. This prefabricated "clean build" approach also allows for the coordination of project schedules so that construction materials can be shipped in stages to coordinate with other trades.

Consistent Quality

Modular systems offer advantages for meeting regulatory requirements and standards because they are manufactured in accordance with ISO 9001 standards that produce a consistent, quality product with no variation. This ensures that what has been successfully employed at one facility will perform the same in future installations, and the system will be installed in a set manner, producing a consistent performance and appearance.

Financial Savings & Environmental Benefits

Modular construction has proven to have a lower lifetime cost over conventional construction for many reasons:

- Modifications are inexpensive, clean, and non-disruptive.
- Existing walls can be reused eliminating the need for new materials, labor, and renovation costs.
- There are tax advantages associated with modular construction.
- Greater productivity, decreased design costs, and increased construction predictability achieve significant savings.
- Less construction material is wasted due to greater reliance on prefabricated components that eliminate on-site modifications.
- A facility can earn LEED points to improve its Green Building Rating.

CleanLine Wall Systems

The CleanLine System represents our all-purpose solution for creating a wide variety of Cleanrooms and environmental enclosures. The line is designed for applications from ISO 4 to ISO 8 Cleanroom environments, but it is cost-effective enough to use for simpler applications involving basic process segmentation or control over air quality, temperature, or humidity.

The extruded aluminum components and ultra smooth panel surfaces are ideal for achieving maximum cleanliness in a controlled environment. With all the options available, PortaFab can tailor a Cleanroom to fit your environmental control and plant configuration needs faster and at a lower cost than with conventional construction.

cleanLiNE

The CleanLine System includes three distinct wall systems that can be used in combination with each other to create functional environments with a consistent appearance.

S3000 Wall System

The S3000 3" thick Cleanroom wall system is the perfect solution when a freestanding Cleanroom envelope with a plenum cap is required and the design criteria do not allow the Cleanroom to tie into an existing structure where the ceiling can be supported. The system's load-bearing roof provides support of mechanical equipment.

- 3" (76mm) wall panel system with wiring raceway
- Load-bearing roof capabilities
- Available in heights up to 18' tall
- All aluminum framework

PM458 XTRA TALL Wall System

The PM458 system features extra height walls that make it the ideal choice for applications where extended ceiling heights are demanded due to tall equipment.

The system can integrate with an existing ceiling or be used to create a freestanding envelope with load-bearing decks. The simple, fast installation of the PM458 minimizes plant disruption while the variety of core materials and panel finishes allow you to meet requirements for acoustic, thermal insulation, chemical resistance, and static control.

- 4-5/8" (117mm) wall panel system with wiring raceway
- Load-bearing roof capabilities
- Available in heights up to 24' tall

Furring Wall System

PortaFab's FabLine Furring Wall System integrates seamlessly with CleanLine wall systems and can be used as a cost-effective option for lining existing walls. It is available in 1/4" and 1/2" thick sizes and can accommodate a wide variety of panel options.

The Furring wall system offers a cost-effective solution for lining existing walls.

S3000 walls are ideal for creating stand-alone Cleanrooms for the medical device industry.

PM458 provides extra tall walls for increased ceiling heights.

CleanLine Wall Panels

Panel and Post

The "Panel and Post" design of the CleanLine system provides maximum flexibility relative to the types of wall panels that can be utilized. PortaFab can manufacture composite panels to meet a wide variety of specifications. Common wall panels are listed below, but numerous surface finishes and cores are available.

S3000 Load-Bearing Aluminum Stud System

Typical Layouts

Panels are available with various surface finishes including:

- Fiberglass reinforced plastic (FRP)
- High pressure laminates (HPL)
- Painted aluminum (conductive or non-conductive)
- Painted steel
- Porcelainized steel
- Stainless steel
- uPVC
- Vinyl

Panel cores include:

- Aluminum honeycomb
- Polystyrene
- Hollow (air return)
- Polyisocyanurate
- Others based on project requirements

Fire & Sound Panels

Our best selling Cleanroom wall panels feature gypsum board over a polystyrene core with vinyl, steel, aluminum, or FRP surfaces. These panels meet most building codes and provide ample sound deadening for most applications.

Aluminum Honeycomb

Polyisocyanurate

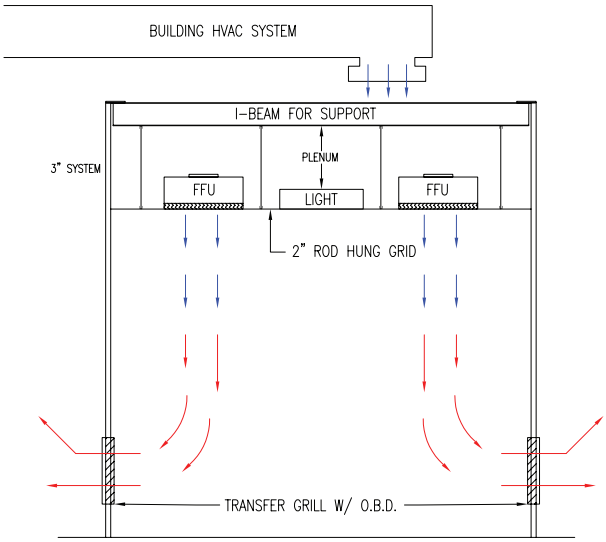
Stainless Steel

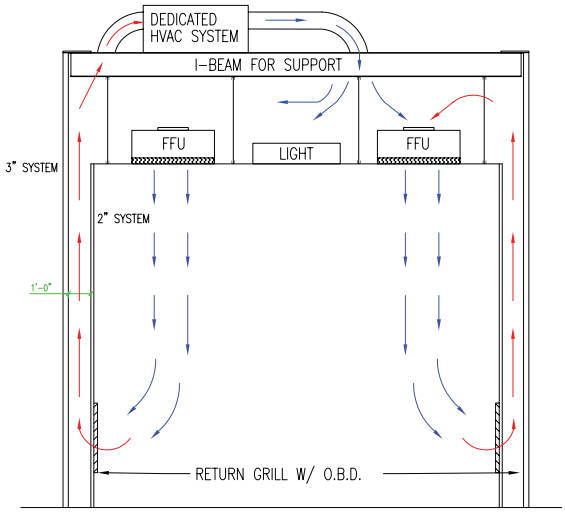
Applications

cleanLINE

The CleanLine System is a very versatile wall system that can be used in a wide variety of applications. It can be installed as a freestanding envelope structure independent of the rest of the building or as a floor-to-ceiling system that integrates with existing structural elements.

CleanLine can be used to create both "Single Pass" and "Recirculating" type Cleanrooms. Load-bearing decks provide support to mechanical equipment and the non-progressive construction allows one to change panels easily or relocate the entire structure.





Single Pass

Ambient air is filtered into the Cleanroom and transferred out into building space. Single pass systems are utilized commonly in environments that are smaller and not a stringent classification of Cleanroom with low tolerance of temperature and humidity control.

Recirculating

Ideal for rooms with temperature or humidity requirements. Air handling units condition the air which is drawn through low wall returns and into the ceiling plenum. Recirculating designs are used in applications to isolate the environment for greater process control.

CleanLine Systems can provide environmental control for all types of molding and machining operations.

Cleanline Systems can be used to meet USP 797 regulations in the design and construction of compounding pharmacies.

FabLine Wall Systems

FabLine Wall Systems make it easier and more cost-effective than ever to create ultra-clean facilities meeting the critical environmental conditions demanded in the precision microelectronics and nanotechnology industries.

This highly adaptable wall system utilizes common components that provide maximum flexibility while minimizing inventory of parts. It interfaces with ceiling grid systems, flooring systems, existing modular wall systems and conventional construction.

The FabLine Series includes three wall systems for a variety of applications. Pre-engineered wall panels are interchangeable within all three systems for consistent appearance, reduced inventory, and faster installation.

Framed Wall System

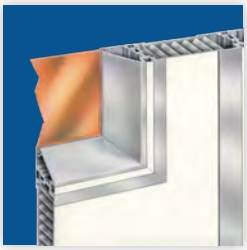
FabLine Framed Wall Systems provide the optimum combination of high durability, design versatility, and simple installation. Designed for extensive bulkheading around tools, this system features vertical and horizontal members that are easily connected to each other to simplify construction and provide air tight seals around equipment tooling for minimum loss of room pressurization.

- Minimal connection hardware allows for quick installation.
- Three panel thicknesses are available: 1/4", 1/2", 2"
- Walls can be supported from the floor or ceiling.
- Strut clamps can be used to attach conduit and piping on the rear of the wall.

Furring Wall Systems

This economical system provides the ability to create a Cleanroom out of an existing room or upgrade a Cleanroom already in use. It is a cost-effective solution for installation over existing block or gypsum walls, drywall studs, and columns. Its functional design also allows it to be installed on strut-type framing to create a mechanical chase.

Batten Wall System

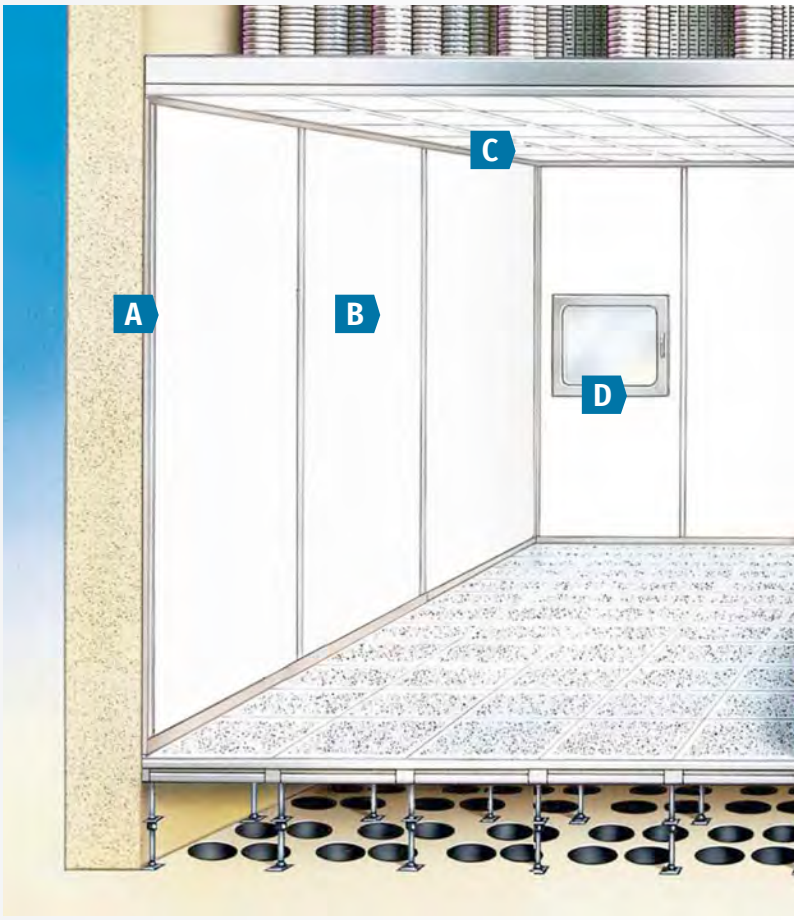


The Batten 2000 wall system is a cost-effective alternative to Framed Systems for areas which do not require extensive bulkheading, but can benefit from a double-flush surface partition system.

Chase side of a bay and chase Cleanroom featuring piping, conduit, and support equipment.

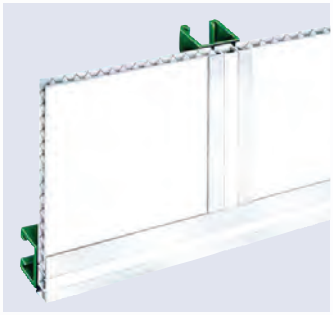
Cleanroom in wafer fabrication facility.

fabLiNE™



A. Furring Wall System

Available with ¼" and ½"thick wall panels, FabLine Furring can be used to skin existing walls or create side wall returns and mechanical chases in a quick and cost-effective manner.



B. Aluminum Wall Panels

Engineered for use in any class Cleanroom, FabLine features aluminum honeycomb wall panels that are non-outgassing, non-particle shedding and anti-static. Tested in accordance with ASTM D-257, these wall panels decrease product contamination.

Other Panel Options

In addition to aluminum honeycomb panels, panels with alternate cores and surfaces are available. Surfaces offered include melamine, vinyl, painted steel, stainless steel, fiberglass reinforced plastic (FRP), polyvinyl chloride (uPVC), high pressure laminates or porcelainized steel.

C. Ceiling Head Track Interface

Gasketed head tracks interface with standard grids and flush grids to provide a virtually seamless transition.

D. Wall Penetrations

Pass through chambers and other equipment can penetrate wall panels through factory installed framed cut-outs.

Trimming at Existing Openings

Furring wall systems are designed to skin and trim around most wall openings and penetrations including doors, windows, and equipment.

E. Framed 250 & 500 Wall Systems

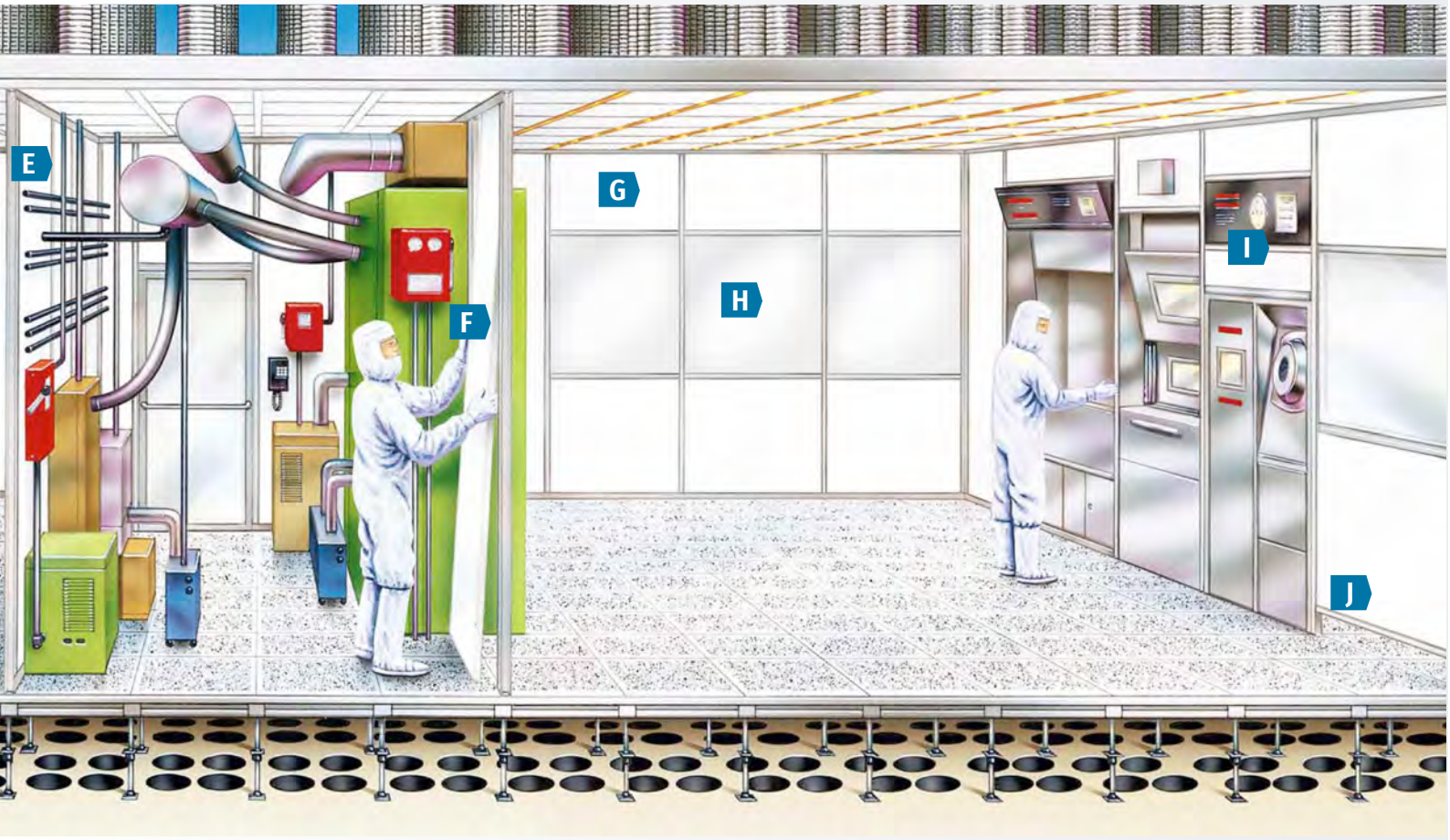
These systems provide a flush surface on the Cleanroom side with integrated support on the chase side for piping, conduit, and related equipment required to service the Cleanroom. They are a cost-effective solution for bay and chase Cleanroom designs requiring small and large gasketed bulkheads.

Fabline Framed 2000

Utilizes a 2" thick wall system for Cleanrooms requiring a flush surface on both sides of the wall panel.

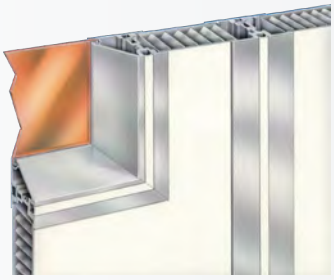
F. Non-Progressive Construction

Non-progressive construction allows easy removal of panels from either side of the wall without disturbing adjacent panels, ceiling, or framing posts.



G. Batten Wall System

The Batten 2000 wall system is a cost-effective alternative to Framed Systems for areas which do not require extensive bulkheading, but can benefit from a double-flush surface partition system. The unique design features fewer components and lighter weight panels than the Framed System allowing it to be installed more quickly.



H. Factory Installed Windows

Single or double flush windows with mitered corners provide flush glazing with a beveled sill that allows for easy wipe down. Windows can be glazed from stud to stud for full glass viewing and can be pre-installed in full size panels to reduce labor costs and time in the field.

I. Extensive Bulkheading Capabilities

Tool fit-ups and equipment can be easily integrated into the Framed Wall System for a sealed interface. Vertical and horizontal members connect to each other simplifying construction and providing gasketed air tight seals around equipment tooling for minimum loss of room pressurization.

J. Elevated Wall Panel

Panels can be elevated for side wall returns. Egg crate and wire mesh grills can be integrated with the studs to conceal mechanical plenums.

Paint Finishes

A variety of painted finishes are available including conductive epoxy, non-conductive epoxy, acrylic, polyester or powder coating.

Resistance Against ESD Contamination

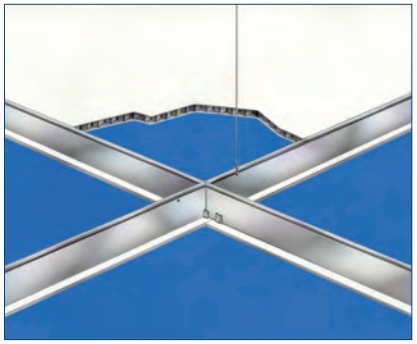
With excellent panel surface resistivity and impressive electrostatic decay times, FabLine wall panels provide optimum static protection in most applications. Framework and doors are also available to meet the same criteria in a variety of colors.

Ceiling System

Cleanroom Ceiling Systems

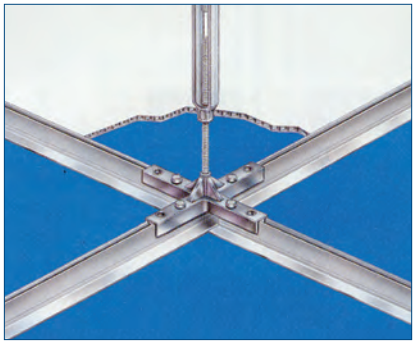
PortaFab offers two unique ceiling systems including our economical 1-1/2" gasket grid and our heavy-duty 2" gasket grid. Standard Cleanroom ceiling tiles are constructed of 1/4" aluminum honeycomb with painted surfaces.

1-1/2" Gasket Grid



The 1-1/2" Gasket Grid Ceiling System is the perfect solution for diverse applications including semiconductor, aerospace, food service, food processing, pharmaceutical, and hospital industries. It is designed with a 1-1/2" face tee to support HEPA filter systems and light fixtures. Choose 2' x 2' or 2' x 4' tiles and ceiling grid systems available in white, vinyl coated steel, and clear anodized finishes.

2" Gasket Grid



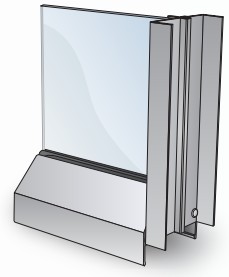
The 2" Gasket-Seal Ceiling Grid System combines flexibility with simplicity to meet the ever-changing needs of the technology industries. It is a functional system that provides a 2" wide structural grid system with aluminum extrusions and zinc die castings to receive standard filter modules, light fixtures and blank ceiling tiles. Truly an engineered system for ease of installation, the system can be used in 2' x 2', 2' x 4', 4' x 4', and custom layouts.

Cleanroom Windows

PortaFab manufactures a number of standard window units that integrate seamlessly with its modular wall and ceiling systems. Windows can also be integrated into return air walls to minimize any air flow disruption.

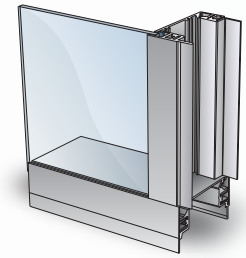
Beveled Window

Designed specifically for Cleanroom applications, the absence of a ledge on this window makes cleaning easier as the design eliminates corners that often collect dust, particles and other microorganisms. It is a cost-effective alternative to double flush window systems.



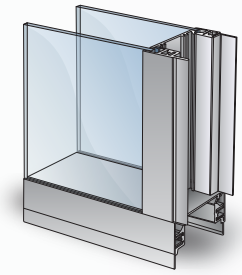
Flush Window

Windows are mounted into the wall system to provide a completely flush surface. To minimize any air flow disruption, windows can also be integrated into return air walls.



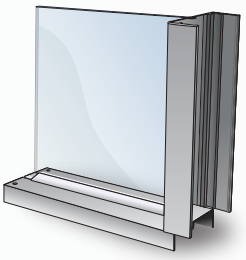
Double Flush Window

Designed for interior wall applications that require flush surfaces on both sides, the double flush window system provides an attractive appearance and two completely flush surfaces.



Standard CleanLine Window

These economical windows include fixed windows that measure either 4′ or 2′ wide by 3′ high. All standard windows feature 1/4″ clear tempered safety glass, but we also offer laminated glass for added sound control, insulated glass, and break resistant polycarbonate windows.



Glazing Options

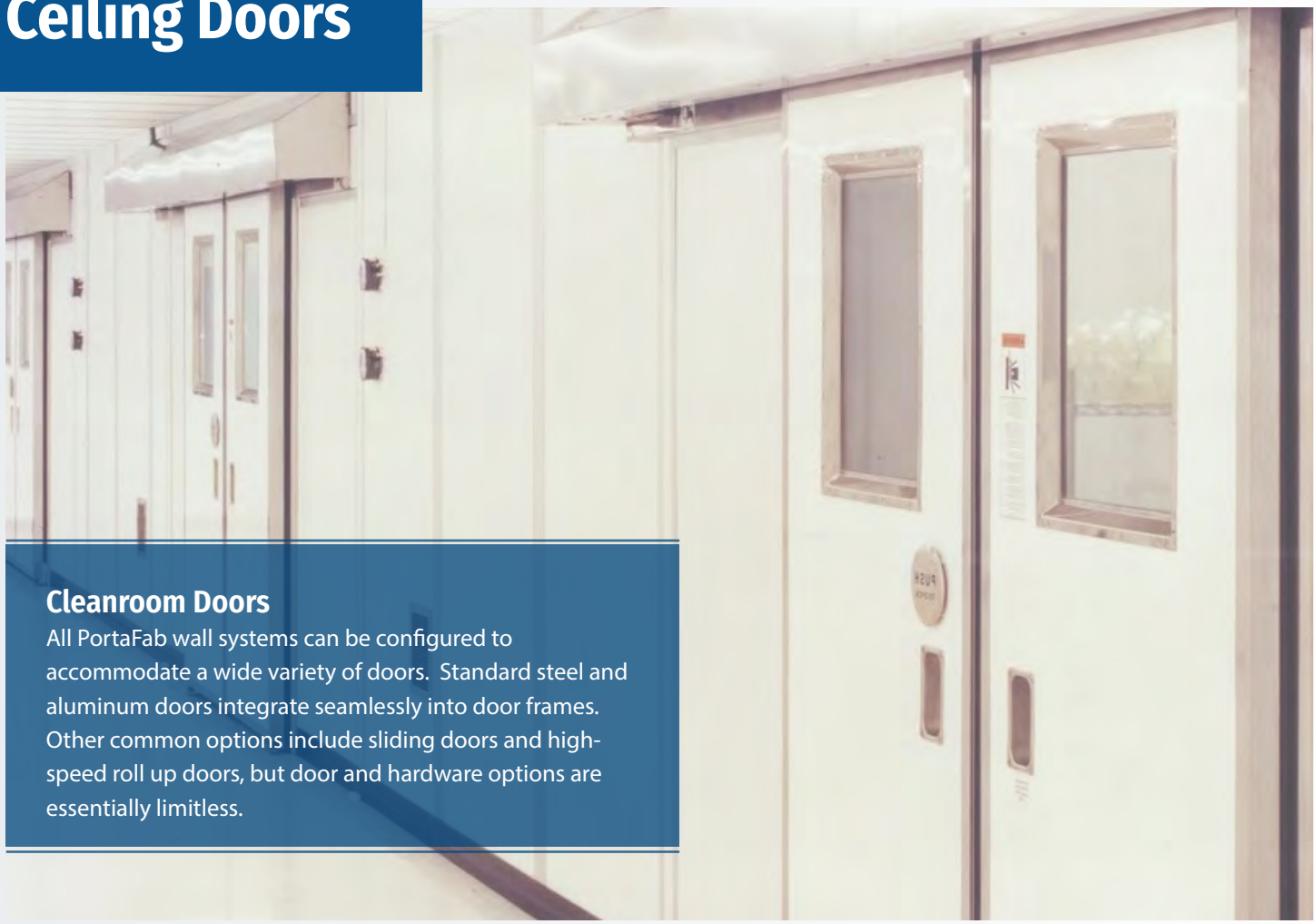
Windows can be glazed with a variety of options as specified by the project requirements. Common options include:

- Acrylic
- Double glazing
- Film covered glass
- Lexan™
- Static dissipative
- Tempered glass
- Tinted glass
- Laminated
- Insulated

Sizes

Available window sizes will depend on the wall system being utilized, but various sizes are available and easy to integrate into most applications.

Ceiling Doors



Cleanroom Doors

All PortaFab wall systems can be configured to accommodate a wide variety of doors. Standard steel and aluminum doors integrate seamlessly into door frames. Other common options include sliding doors and high-speed roll up doors, but door and hardware options are essentially limitless.

High-Speed Roll Up Doors

High-speed doors reduce the amount of time the Cleanroom is exposed to the outside environment. Door sizes up to 18' x 18' can be integrated.

Aluminum Doors

Full glass or half glass architectural aluminum doors are available with a variety of hardware options, including pivot hinges, surface mounted closers, concealed closers, panic hardware, and locksets.

Electric Sliding Doors

Sliding doors integrate into our wall systems and are available in any size with a variety of hardware available including push button entries, motion sensors, and interlocks.

Specialty Doors

From fiberglass to stainless steel, PortaFab designers can integrate all types of specialty doors with its wall systems.

Options & Accessories

A. Fan Filter Units
Various fan filter units can be incorporated into PortaFab Cleanrooms depending on your exact specifications.

B. Grill Openings
Grill openings and cutouts for other climate control equipment can be factory installed to reduce labor costs and assembly time.

C. Air Showers
Air showers and air shower tunnels for both personnel and carts integrate easily into PortaFab wall systems.

D. Pass Through Chambers
Pass through chambers minimize entry of contaminants (into the Cleanroom) by providing a means for pick-up and delivery of products and supplies without personnel entry. Productivity is increased because (Cleanroom) workers remain clean and on the job while delivery personnel and contaminants remain outside.

E. Mezzanine Plenum Structures
The need to support mechanical equipment, piping, and ceiling systems is critical in Cleanrooms. When an existing facility is unable to offer this criteria, mezzanine plenum structures can be integrated into the Cleanroom design to provide our "envelope" structure without tying into the existing building's roof (these freestanding structures can be designed to any configuration and size).

F. Cleanroom Floors
Unlimited flooring options are available including sheet flooring, raised access floors, and more.

G. Coving
Radius coving is used to create fully flush corner transitions and seamless wall-to-ceiling and wall-to-floor connections. By eliminating corners, the radius coving system allows for total "cleanability." Wall-to-wall and wall-to-ceiling junctions can be trimmed with coving that features a large 3" radius. The 2-piece cove can be mounted to either wall or ceiling surfaces.


A. Fan Filter Units


B. Grill Openings


C. Air Showers


D. Pass-Through Chambers


E. Mezzanine Plenum Structures


F. Cleanroom Floors


G. Coving

Photo Gallery

Load-bearing plenum decks provide a maintenance platform eliminating the need for a separate catwalk

Microelectronics test and assembly room

Liner walls interfacing with exterior building for unobstructed view of outside

Modular systems integrate easily with any architectural designs

Ultra Clean Packaging Line

Nanotechnology Research Facility

Gowning Room

Photo Gallery

University Research Facility

Packaging Facility for Filling Injectibles

Column enclosures provide space to run utilities, services, and air flow

Bi-Parting Automatic Doors

Bulkheading capability for tools and equipment

Linear wall provides unlimited height capabilities

Raised wall panels for low air return

Environmental enclosure for improved air quality and product yield. (images show enclosure under construction)

Additional Modular Construction Capabilities

Applications & Ideas

Painting and Finishing Systems

Modular Architectural Cleanroom Systems

Modular Offices & Inplant Buildings

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