

Swinging into Efficiency: The Benefits of Cleanroom Hinged Doors

JAMISON DOORS™
Built to last

Jamison's cleanroom hinged doors combine advanced sealing, contamination resistance, and smart automation to support critical environments where cleanliness and compliance are everything.

Classic Design. Cutting-Edge Cleanroom Performance.

In controlled environments, even minor contamination can jeopardize research, manufacturing, and product quality. Thus, the design of cleanrooms is crucial for maintaining integrity in these sensitive spaces. Among the myriad choices for maintaining these pristine conditions, the selection of cleanroom hinged doors plays a pivotal role.

Hinged cleanroom doors, while sometimes overlooked, bring significant advantages to the table. Their efficiency, cleanliness, and operational effectiveness put them in the spotlight within cleanroom design discussions.

Key Takeaways

- How hinged doors enhance contamination control, safety, and compliance
- Key benefits of Jamoclean swing doors in pharmaceutical and biotech settings
- What makes hinged doors ideal for regulated cleanroom environments

The Importance of Cleanroom Environments

Designers create cleanrooms to maintain extremely low levels of particulates such as dust, microbes, and vapors. They're essential in fields like semiconductor manufacturing, biotech, pharmaceuticals, and research, where small particles can disrupt production or contaminate products.



Controlling a clean room environment involves more than just air quality. Temperature, humidity, and pressure are also crucial for meeting cleanroom standards. Each of these factors plays a vital role in preventing contamination. It requires detailed attention in both the design and operation of cleanrooms.

Air Quality

Cleanrooms maintain air quality by employing High-Efficiency Particulate Air (HEPA) or Ultra Low Penetration Air (ULPA) filters. These filters are capable of capturing particles as small as 0.3 microns, effectively removing dust, microbes, and aerosols. Such filtration is crucial to prevent these contaminants from degrading the cleanroom's environment.

Additionally, controlling air quality extends to managing airflow patterns, speeds, and the rate of air changes. This process constantly removes contaminants and prevents them from settling on surfaces.

Temperature

Temperature control in cleanrooms is vital for multiple reasons. First, it ensures product quality and consistency in industries like semiconductor and pharmaceutical manufacturing, which require specific temperatures. Second, the temperature influences how particles behave in the air. Keeping temperature within an optimal range minimizes the risk of contamination.

Additionally, controlling temperature enhances the comfort and safety of personnel in the cleanroom. This can indirectly reduce contamination risks by lowering the chances of human error or procedural mistakes.

Humidity

Humidity control is equally important in cleanrooms. Excessive humidity can lead to condensation. This in turn can foster the growth of microorganisms and contribute to corrosion of sensitive components.

On the other hand, too low humidity can increase static electricity. This can attract particles and potentially damage electronic components. Maintaining an appropriate humidity level is therefore essential for both preventing microbial growth and minimizing electrostatic discharges.

Pressure

Maintaining positive pressure in cleanrooms compared to adjacent areas is crucial for preventing contamination. Positive pressure ensures air flows out of the cleanroom when doors open. Blocking unfiltered air and contaminants from coming in.

This strategy is especially critical in highly classified cleanrooms. In such environments, even tiny amounts of contamination can severely affect both operations and results.

What is a Hinged Door?

A hinged door, or swing door, is a classic design that swings open or closed on hinges attached to one side of the frame. This simplicity and effectiveness have made the reliable mechanism widely used for centuries. Cleanrooms tailor hinged doors with features like tight seals and cleanroom-standard materials to prevent contamination. They also often have designs that promote cleanliness and reduce particle generation, such as smooth surfaces and few ledges.

Hinged Cleanroom Doors: A Closer Look

Hinged doors feature a simple and dependable design, swinging open or closed on hinges mounted to one side. This mechanism allows for easy operation and reliable functionality.

Experts have adapted this classic approach to door design for cleanrooms. Clean room doors, including clean room hinged doors, are engineered with precision to prevent contamination. Tight seals and materials that meet stringent cleanroom standards make them suitable for use.



Operational Efficiency

Hinged doors significantly contribute to the operational efficiency of cleanrooms through their design and functionality. Their ease of operation facilitates quick and easy access for personnel and materials, reducing downtime and improving workflow. This is particularly important in high-throughput environments where time savings translate directly into increased productivity.

The availability of an automatic clean room door feature in hinged doors enables smooth integration into automated systems. This enhances operational efficiency and minimizes contamination risks by reducing direct contact.

Compliance with Regulatory Standards

In critical sectors like pharmaceuticals, biotechnology, and semiconductor manufacturing, adhering to regulatory standards for cleanliness and contamination control is essential. Hinged cleanroom doors are engineered to fulfill these rigorous requirements.

They come equipped with tight seals and are made from materials that prevent the introduction of particles or microbes. These doors play a vital role in maintaining a controlled environment, significantly reducing contamination risks. Consequently, they assist facilities in staying compliant with industry regulations. Including the ISO 14644 standards for cleanrooms and controlled environments.

Enhancement of Safety Protocols

Safety within cleanrooms extends beyond the control of contaminant. This is to include the protection of personnel and the prevention of accidents. Hinged doors contribute to safety protocols through the incorporation of features such as fire-resistance, emergency exit capabilities, and visibility windows.

Fire-resistant materials and designs ensure that doors can help contain or slow the spread of fire. Providing critical time for evacuation. Emergency exit features allow for quick egress in the event of an emergency. Lastly, windows increase visibility and reduce the likelihood of collisions.

Customization for Specific Requirements

The ability to customize hinged doors to meet the specific requirements of a cleanroom adds another layer of utility. Customization of doors in cleanrooms includes adjusting size for equipment access, adding security locks, and choosing materials for chemical resistance. This ensures doors meet the specific operational and environmental requirements of each cleanroom. This level of customization not only enhances functionality but also contributes to the overall integrity and efficiency of the cleanroom operation.

Supporting Cleanliness and Minimizing Contamination

Hinged doors play a crucial role in supporting cleanliness and minimizing contamination. Their design facilitates easy cleaning and disinfection, critical in maintaining the cleanroom's contamination control standards. Materials that don't rust or get damaged by chemicals keep doors clean and free from contamination. Additionally, the option for hands-free operation minimizes the risk of contamination from touch, supporting the cleanroom's overall contamination control strategy.

Jamoclean® Swing Doors for Cleanroom Environments

Jamison introduces a seamless and hygienic fiberglass swing door system. Leveraging over 60 years of experience to ensure reliability in the most demanding cleanroom environments. Ideal for life sciences, where quick access and environmental control are paramount. Jamison cleanroom doors offer custom solutions that are not just clean and durable, but also secure.

- **Versatile Operation:** Choose between manual operation with a standard spring assist closer or automated operation via an electromechanical operator.
- **Compact and Adaptable:** Designed for lightness and compactness, these cleanroom doors fit all installation environments.
- **Energy Efficient:** The electronic control unit with a switching power supply ensures low electricity consumption, translating to significant savings.
- **Durability and Reliability:** The brushless motor reduces wear, enhancing the door's longevity and performance.
- **Innovative Control:** A digital touchscreen keypad with NFC capability minimizes space while providing an intuitive interface.

Cutting-Edge CleanDrive Technology

Jamoclean® high performance cleanroom swing doors are equipped with UL325 approved CleanDrive technology. The cleanroom swing doors prioritize safety, silence, and smooth operation through their automation design. These are crucial attributes for controlled environments that demand minimal downtime.

The technology includes an extra compact direct drive system, making it versatile enough to fit any setting. This system uses a brushless motor with an encoder, ensuring exceptional durability and reducing wear over time.



Extremely Clean

Thanks to monolithic molded construction, Jamoclean® doors achieve a seamless, impermeable outer shell with a smooth gelcoat surface. This design is especially clean and perfect for life sciences. It stops bacteria from hiding in cracks or seams because it seals tightly on all sides.



Complete Durability

Fiberglass layers give these swing doors their structure and strength. Solid fiberglass reinforcements add extra durability and precision to their design. Optional heavy-duty stainless edge capping offers extra reinforcement.



Superior Sealing

The doors feature a three-sided perimeter gasket and a bottom sweep gasket. Both mount on the door frame for top sealing efficiency. Additionally, panel-mounted astragals enhance this seal. This combination is essential for preserving the cleanliness of cleanrooms.



Secure Operation

Jamoclean® doors feature a variety of locking mechanisms, both electronic and mechanical, to meet diverse security requirements.

Jamison – Your Premier Cleanroom Door Partner

Jamison Doors leads in providing superior cleanroom door solutions. Specializing in high-quality doors for pharmaceuticals, biotech, and semiconductor sectors, they deliver unmatched innovation and durability.

Jamison offers different types of doors. These include hinged, sliding, and automatic clean room doors. They are designed to meet strict cleanliness and contamination control standards. Choosing Jamison as your cleanroom partner means investing in reliability, efficiency, and compliance with the highest industry standards. With Jamison doors, you can trust that your controlled environment is safeguarded against contamination.

JAMISON DOORS™

Member of **BMP Group**

55 JV Jamison Drive, Hagerstown, MD 21740
(800) 532-3667 | Contact@jamisondoor.com | Jamisondoor.com