




Choosing the Right Cleanroom Equipment Supplier



A photograph of two workers in a cleanroom environment. They are wearing white protective suits, hoods, and respirators. The background shows industrial equipment and a clean, sterile setting. The image is overlaid with a semi-transparent green filter.

Whether used to manufacture pharmaceuticals or semiconductors, effective cleanrooms are vital in many settings to maintain safety, product quality, and standards compliance. Since these fixtures have such a significant impact on operations, it's crucial to work with a trusted and experienced cleanroom supplier.

Founded in 1953 by entrepreneur and inventor John Nappi, Sr., Liberty Industries has grown from a small machine shop to a global leader in cleanroom equipment manufacturing. In our nearly 70 years in the industry, we've remained at the cutting-edge of cleanroom technology, all while upholding our original commitment to honesty, integrity, and reliability. As a result, clients can trust us to complete their projects with the utmost skill and care.



Considerations When Choosing Your Cleanroom Equipment Supplier

Selecting a cleanroom equipment supplier is a consequential decision. To ensure you receive quality equipment tailored to your specific application, it's important to carefully vet both the supplier and their products.

Key Considerations for Cleanroom Supplies & Equipment

Before purchasing any supplies, first evaluate how well they align with your application's requirements. Specifically, consider the following characteristics:

- **Compliance.** All equipment and supplies must be appropriate for your industry and your cleanroom's classification. This also applies to constraints such as electrostatic discharge and non-outgassing requirements. Never assume that supplies labeled as "cleanroom" are appropriate for your specific cleanroom. Instead, request full specifications and independent test data from your supplier to ensure that every element meets your requirements.
- **Materials & Quality.** Cleanroom equipment is subject to frequent, intensive sanitation protocols, in addition to the potentially harsh conditions of the cleanroom itself. Choose materials such as stainless steel or aluminum and finishes such as powder coating that can hold up to your operating conditions. Cheaper synthetic materials may need premature replacement, so the cheapest initial price may not offer the best long-term value. The same applies to workmanship: invest in well-made components so that you aren't forced to pay for excessive repairs and replacements.
- **Documentation.** The above considerations point to the importance of thinking ahead when purchasing cleanroom supplies. As part of this, you should collect documentation for all equipment upon purchase and receipt, including manuals, parts lists with life expectancies along with full make and model numbers. File the data for future reference to facilitate later maintenance.



What to Look for in a Cleanroom Supplier

Evaluating the prospective supplier is just as important as evaluating equipment before purchase. Equipment quality is directly tied to product quality, so you should be confident that your supplier can uphold the rigorous standards you maintain in your own facility.

The following criteria can help you assess suppliers before you enter into a contract:

- **Cleanroom Experience.** It's imperative to choose a supplier with a deep knowledge of cleanroom operation. Experienced suppliers can provide personalized guidance as to the best supplies and procedures for your cleanroom. By contrast, suppliers that simply sell cleanroom equipment can offer only generalized advice at best and inaccurate advice at worst. For trustworthy and comprehensive service, look for companies that know exactly what it takes to construct, supply, and maintain a cleanroom environment. Experience in your specific industry is even better as all applications come with their own unique constraints and criteria.
- **Track Record.** Knowledge is important, but more telling is a track record of successful projects. Cleanrooms are incredibly complex, so you need evidence that your supplier can put their knowledge into practice. Extensive experience is a useful indicator, but client references are more informative as they reveal the team's ability to build lasting client relationships.
- **Transparency & Communication.** You should never struggle to get a response from your supplier, whether you need product documentation or are seeking a reference from previous clients. Along the same lines, reputable suppliers should be able to produce all test data and specifications for their cleanroom products on demand, and they should be able to answer your questions about the results. Look for vendors that are interested in building genuine client relationships rather than simply selling products.

Be sure to take your time when evaluating a potential cleanroom vendor. Bringing subpar equipment into a controlled environment can lead to serious and costly contamination, after which you will be forced to restart the search for a reputable supplier.



Types of Cleanrooms & Their Standards

Central to any discussion of cleanroom supplies are the differences between cleanroom constructions and their applicable regulatory standards.

Types of Cleanrooms

The two primary classifications of cleanrooms are softwall and hardwall structures.

- **Softwall Cleanrooms.** Softwall cleanrooms feature a metal superstructure with transparent vinyl walls. They are best suited for ISO ratings from 4 through 8. Thanks to their quick installation and smaller footprint, softwall cleanrooms are ideal for facilities with space constraints, including those seeking temporary installations.
- **Hardwall Cleanrooms.** Hardwall cleanrooms differ from softwall cleanrooms in that their walls are made from acrylic or prefab panels, 3" thick walls panels with white vinyl covered on the gypsum board on the interior and exterior and a polystyrene core. Although hardwall cleanrooms tend to be more expensive, they are more stable and offer better air pressure regulation. They can be constructed to meet any ISO standards from the most stringent to the most lenient. That means that, unlike their softwall counterparts, hardwall cleanrooms can easily handle ultra-clean applications.

Although some facilities need dedicated softwall or hardwall cleanrooms, other situations call for temporary structures. Modular softwall cleanrooms can be installed indoors to accommodate emergency work or short-term projects. All cleanrooms, whether hardwall or softwall and temporary or permanent, are designed to adapt to application requirements through fittings such as filters, lighting, and custom furniture.



Cleanroom Classes and Standards

ISO 14644 standards dictate the acceptable level of particle contamination for cleanrooms of various classes. Cleanrooms must comply with different ISO standards depending on their application. Class 1 corresponds with the most sterile applications, such as those in the life sciences or nanotechnology. Class 9, on the other hand, is the least stringent, so it is used for applications like packaging medical products.

The strictest level, or ISO Class 1, permits no more than 10 particles of 0.1 microns in width per cubic meter. ISO 5 rooms, considered to be “super clean,” permit up to 100,000 particles of 0.1 microns and up to 3,520 particles of 0.5 microns per cubic meter. By contrast, the least sterile cleanrooms may contain up to 35,200,000 particles of 0.5 microns per cubic meter.

These classes come with varying recommendations for airflow and air changes. Classes 1 and 2 usually require between 360 and 600 changes per hour at >80% ceiling coverage, while a Class 8 room might need just 5 changes at 5-15% ceiling coverage.

Your supplier should have an in-depth understanding of these standards as they relate to various pieces of equipment. All products and packaging must be adapted to ensure that they do not interfere with the cleanroom’s specific sanitation standards. For instance, materials should be double-bagged for Class 1 and 2 rooms. Similarly, garments, wipes, and cleaning supplies should be evaluated for particle shed before entering the most sanitary cleanrooms. These fine details illustrate the value of finding a supplier with practical cleanroom experience.



Design & Construction Services by Liberty

At Liberty Industries, we have decades of experience in cleanroom design and fabrication, and we uphold the highest quality standards when constructing our clients' cleanrooms. We work closely with clients to determine the ideal design for their facility, considering the following factors:

- Cleanliness level
- Floor plan and room requirements
- HEPA and ULPA filtration and airflow patterns
- Environmental conditions (including temperature, pressure, and humidity regulation)
- Ideal materials considering outgassing and electrostatic discharge requirements
- Fire protection
- Process requirements
- Light level

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These variables all work together to create a safe, and efficient, cleanroom environment.





Trust Liberty as Your Cleanroom Partner

Your cleanroom is too important to get wrong. Whether you're operating an ultra-clean ISO Class 1 cleanroom or seeking to build a temporary ISO Class 9 structure, you need an experienced partner to ensure your facility operates at its peak.

With decades of experience in the industry, Liberty Industries, Inc. is a world leader in cleanroom design, manufacture, and supply. [Contact our experts](#) today to learn how we can help.



About Us

Liberty Industries is a manufacturer and distributor of top quality cleanroom and contamination control supplies and accessories throughout the world since 1953. Their services include the design & construction of cleanrooms across a wide variety of industries, in addition to a catalog of products designed to maximize efficiency in contamination control.

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