



# Cleanrooms

Modular and Stick-Built  
Designs and Accessories

[www.TerraUniversal.com](http://www.TerraUniversal.com)

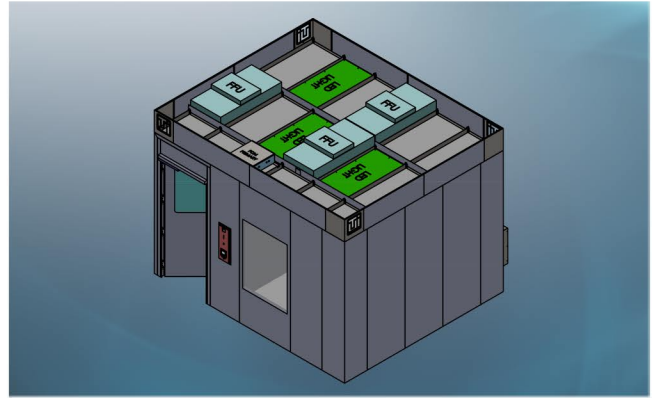
# Cleanroom Solutions

In the past 6 years, Terra has installed 2,132 cleanroom projects for active operations across the globe



## About Us

Terra breaks ground on hundreds of new cleanroom builds each year. Whether you need end-to-end outfitting, turnKey operation, or help to retrofit your existing build, Terra offers stocked and ready-to-deliver panels, fan filter units, pass-throughs, gloveboxes, gowning furniture, and IOT-ready, UL-listed power-control systems



## Our Capabilities

As a pioneer in the critical environment industry, Terra Universal has developed and manufactured innovative solutions since 1976. Combining high-throughput, automated fabrication equipment with a robust, active stock of raw materials, Terra is capable of producing cleanrooms of any design, size, scope, and complexity at industry-leading build times.

## Simplify Your Cleanroom Build

Terra's hardwall cleanroom solutions simplify the road to final validation and certification among ISO, CGMP, EU, USP, and FDA requirements. Terra's enclosures and components are designed to meet the highest ISO 14644-1 standard of air cleanliness, with the vast majority of its customers operating within ISO 5 - ISO 8 conditions.

Class ISO 146144-1	Federal Standard 209E	Particles Per Cubic Meter 0.3 Micron	0.5 Micron	Air Changes Per Hour	Fan Filter % Coverage
ISO 8	Class 100,000	---	3,520,000	5 - 48	5 - 15%
ISO 7	Class 10,000	---	352,000	60 - 90	15 - 20%
ISO 6	Class 1,000	102,000	35,200	150 - 240	25 - 40%
ISO 5	Class 100	10,200	3520	240 - 480	35 - 70%
ISO 4	Class 10	1020	352	300 - 540	50 - 90%
ISO 3	Class 1	102	35	360 - 540	60 - 100%
ISO 1-2	---	10	4	360 - 600*	80 - 100%

\*ULPA Filters Generally Required



# Terra Cleanroom Designs

Terra manufactures [five distinct cleanroom designs](#). Each design is ideal for different user requirements based on individual ISO air cleanliness requirements and specific product sensitivities. Contact a Terra specialist to discuss your specific needs once you have determined your required square footage and target ISO classifications.

[Terra's Modular Hardwall Cleanrooms](#) offer a high degree of customization and tailoring for uncompromising, high-performance cleanroom builds. Terra's modular construction allows for simple integration of Terra's modular ceiling grid, which supports up to 100% FFU coverage without sagging or bowing.

[ValuLine™ Pre-Fabricated Modular Cleanrooms](#) deliver several configurations at a lower cost point than traditional, built-from-scratch designs. These pre-configured systems feature pre-drilled, pre-kitted components that allow you to get up and running in 1 - 2 days.

[BioSafe® Cleanrooms](#) offer the ultimate pairing of cleanliness, cleanability, and durability for sterile outcomes and aseptic workflows. Smooth, sealed internal surfaces are impervious to moisture and free of cracks and crevices that can harbor contaminants, thus making them easy to clean and sterilize effectively, achieving complete microbial elimination.

[Terra's Stick Built Cleanrooms](#) feature traditional framed wall construction, cleanroom-appropriate exterior panels, and wall-to-ceiling coving. Unlike modular designs, stick-builds are not limited by overhead clearance, size, shape, or pathways within the site, making them popular for retrofitting and interior installations.

## Customizable Cleanroom Options

[Custom Modular Cleanroom Systems](#) are ideal for extra-tall spaces, single-use applications (like contract manufacturing), and for operations with multiple, isolated work zones. Terra offers industry-leading build times for customized configurations.

Terra also stocks turnkey, [pre-configured ValuLine cleanrooms](#) that are packaged for immediate shipment and available in common sizes (up to 200 square feet).



**Fully  
Customizable**



# Airflow Configurations

## Positive and Negative Pressure Cleanroom Designs

Positive-pressure cleanrooms maintain a higher internal pressure than the surrounding environment, keeping products and samples safe from contamination. Filtered air flows into the cleanroom through ceiling-mounted fan filter units, washes across work zones, and exits through wall-mounted baffles.

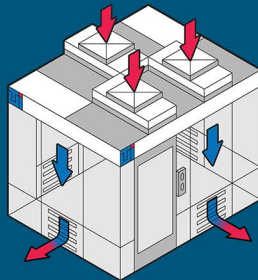
Negative pressure rooms maintain a lower internal pressure than the surrounding environment, protecting operators from exposure and isolating hazardous processes. Air flows into the room through wall-mounted entry baffles, washes across work zones, and exits through filtered, reverse-flow, ceiling-mounted fans.

USP compounding rooms may require a combination of positive and negative pressure rooms in certain applications. A pharmacy compounding non-sterile, non-hazardous drugs, as well as hazardous drugs and materials in unison, will require separate partitions to support both positive and negative pressure areas.

For hospitals and healthcare facilities where new construction is not feasible, Terra's reverse flow fan filter units convert any area into a negative pressure space by porting room air to an outside environment.

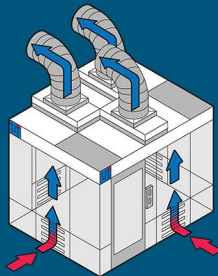
### Laminar Airflow

Air moves in a unidirectional or parallel flow.



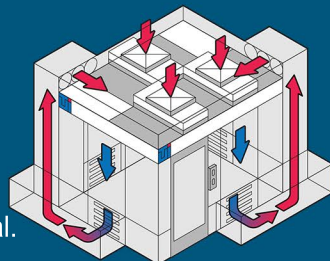
### Negative Airflow

Air is drawn into the space, filtered, and then exhausted out of the space, creating negative pressure within the room.



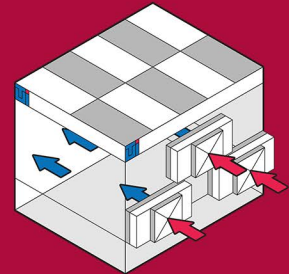
### Recirculating Airflow

Filtered air recirculated for cleanliness and contaminant removal.



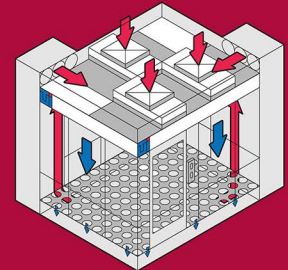
### Horizontal Airflow

Air moves parallel to the ground or work surface.



### Neutral Airflow

Controlled and uniform distribution of air.



# Applications of Cleanrooms in Critical Industries

Terra Universal specializes in designing and manufacturing cleanrooms for several critical applications including USP 797 and 800 cleanrooms for sterile drug compounding, flame-retardant rooms, powder containment booths, and portable cleanrooms.

[Terra explosion-proof systems](#) meet NEC requirements for Class I Division I hazardous locations and enable integration of fire suppression systems.

Other [special application designs](#) include insulated cleanrooms for strict temperature control and negative pressure systems with air scrubbers that allow the removal of molecular contamination and odors.

<b>General applications:</b>	Semiconductor	Medical Device	Biomedical
	Pharmaceutical	Aerospace	Hospitals & Healthcare



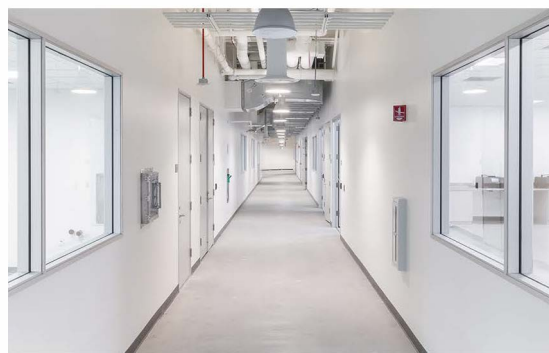
[BioSafe modular cleanroom](#) made of 304-grade stainless steel for GMP-grade pharmaceutical manufacturing and packaging.



[Hardwall modular cleanroom](#) made of static-dissipative PVC for an academic research institution studying microsatellite technology.



[Hardwall modular cleanroom](#) made of polycarbonate with an opaque, polypropylene modesty panel for medical device manufacturing.

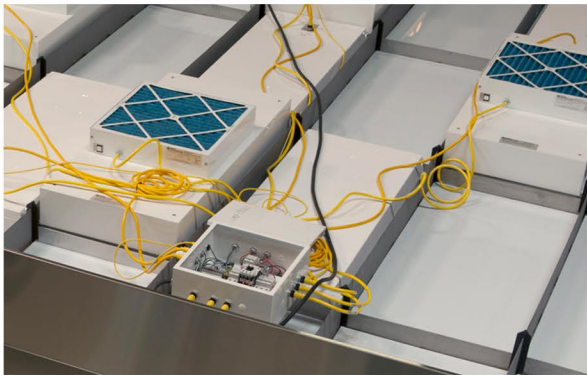


[Stick-built cleanroom](#) for a pharmaceutical metrology lab.



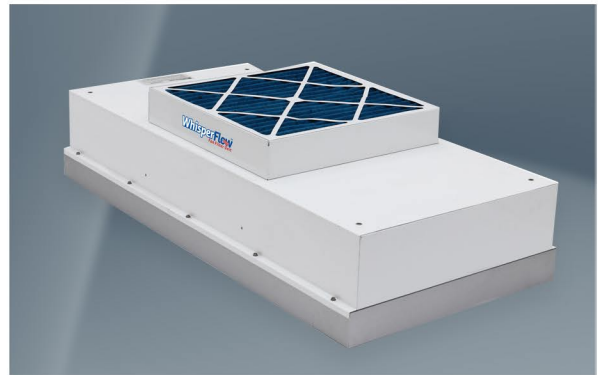
# Cleanroom Accessories

Customize Your Controlled Environment



## UL-Listed Power Distribution Modules

(PDMs) use 3-or 4-pin quick-connect fittings, making it easy to add FFUs or light panels with no electrical expertise required.



## WhisperFlow Quiet Fan Filter Units

Measure under 50 dB from only 1 ft away at 90 ft/min output, roughly 75% quieter than the typical 70dB values of competitor systems.



## Doors and Windows

ISO-rated doors and windows made from cleanroom-grade materials.



## Cleanroom Monitoring System

Easily integrated and scalable, an expected feature for modular cleanrooms that follow CGMP and GLP environmental reporting prerequisites.

# Value-Add Services

Elevate Your Experience



Expedited manufacturing service includes a dedicated team working up to 3 shifts per day to meet short project timelines.



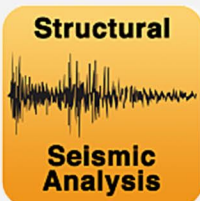
Terra provides an experienced crew of specialists sized to fit the scope and complexity of the installation.



Terra supplies a range of specialized freight services including inside delivery, product placement and assembly, after-hours delivery, and debris removal.



Terra provides turnkey equipment validation packages including IQ/OQ/PQ, factory acceptance testing, user requirement specifications, statements of work and feasibility studies.



Seismic cleanroom calculations stamped by a licensed professional structural engineer to streamline permitting and certification.



Comprehensive turnkey cleanroom service includes decontamination, sterilization, sanitization and microbial testing.



2-year and 3-year product warranties ensure continual optimal performance of Terra-made cleanrooms and accessories.



Thousands of products, including certain Terra cleanrooms, are pre-tested, crated and stocked for immediate shipment.



### **Worldwide Network of Service and Sales Reps**

The Terra network includes over 20 sales regions across the globe with a wide range of global shipping options, including door-to-door international delivery. Terra provides comprehensive installation resources and access to certification and other 3rd-party testing services.

### **Comprehensive Product Portfolio, Globally Honored Pricing**

Terra Universal serves customers across the globe with product prices honored worldwide. Terra's product portfolio includes over 2,400 different products in active inventory, pre-tested, crated, and available for immediate shipment. Many of these products include best-in-class UL-listed components and CE ratings for EU safety, health, and environmental protection requirements.

### **End to End Furnishing and Equipment Supply**

Browse a wide selection of cleanroom furnishings including glove boxes, pass-through chambers, desiccator cabinets, laminar flow benches, and cleanroom-compliant furnishings. Website listings include both standard and metric units for universal convenience.

### **Terra Sales and Customer Service**

Mon - Fri, 09:00 AM - 08:00 PM PST

Tel: +1 (714) 578-6100

Email: [info@TerraUniversal.com](mailto:info@TerraUniversal.com)