bioGO®
BSL-3 Mobile Biocontainment Laboratory
Product Specifications

Overview

Germfree's bioGO® Mobile Biocontainment Laboratories offer the ideal solution for providing surge capacity for laboratory services during periods of emergency. By utilizing a fully equipped, turnkey, Mobile Biocontainment Laboratory, facilities are able to rapidly increase their volume without sacrificing capabilities. Each mobile facility is engineered and constructed to meet or exceed the CDC NIH BMBL guidelines and the World Health Organization (WHO) guidelines for BSL-3 laboratories.

Germfree - Proven track record in deploying advanced laboratory capacity globally

Germfree has been manufacturing innovative laboratory solutions for nearly six decades. Our mobile and modular biocontainment units deliver critical laboratory capacity in the US and throughout the world.

Germfree is the only manufacturer that provides a single-source, OEM solution for both the laboratory and all primary containment equipment. Our leading-edge engineering teams and subject-matter experts are located at our 173,000ft^2 US manufacturing plant. Germfree's turnkey mobile and modular units meet the most stringent biocontainment requirements and provide critical infrastructure for global health security.

General Specifications

Trailer
- External Dimensions:
  - 528” (13.4M) L x 101 3/4” (2.59M) W x 130” (3.3M) H

Laboratory Command Center
- Internal Dimensions:
  - 52” (1.32M) L x 95 1/4” (2.42M) W x 96” (2.44M) H

BSL-2 Laboratory (PCR PREP)
- Internal Dimensions:
  - 136” (3.45M) L x 95 1/4” (2.42M) W x 96” (2.44M) H

BSL-3 Anteroom/Shower Room
- Internal Dimensions:
  - 67 5/8” (1.72M) L x 40” (1M) W x 96” (2.44M) H

BSL-3 Laboratory
- Internal Dimensions:
  - 137 7/8” (3.5M) L x 95 1/4” (2.42M) W x 96” (2.44M) H

Interior Materials

Walls and Ceiling
- Seamless wall system
- Panels come in 40 foot lengths to eliminate wall seams
- Corners permanently sealed with an epoxy compound specifically designed for this purpose
- The end result is a monolithic barrier that is durable and easily cleaned

Flooring
- Finished floor will be a high performance, homogenous, welded seam sheet polyurethane floor

Casework
- Type 304 Stainless Steel work casework
- Purpose built, all welded construction with adjustable shelving

Application

Germfree’s bioGO Mobile Biocontainment Laboratories are turnkey biocontainment facilities suited for immediate deployment worldwide.

Applications include:

- Emergency Disease Surveillance
- Temporary Laboratory Space during facility down time
- Laboratory Swing Space
- Any application where microbiological containment laboratory space is required

bioGO Laboratories are designed to be powered from shore power and are equipped with an automatic transfer switch for integration to locally available generators to provide redundancy in case of power outages or fluctuations.

Features

Advanced Design and Engineering
bioGO Biocontainment Laboratories comply with the NIH CDC Biosafety in Microbiological and Biomedical Laboratories (BMBL) 5th edition guidelines as well as the World Health Organization (WHO) guidelines for Biosafety Level 3.

Flexibility of Operations
Our mobile containment laboratories are designed by a team of biocontainment experts to provide the optimal safety for the handling of biologically contaminated materials. This allows the facility to be effectively utilized for manipulating samples required to be handled in a containment laboratory environment.

Efficient Workflow
Germfree’s bioGO Mobile Biocontainment Laboratories are engineered and equipped for the most efficient workflow. The facility is divided into designated work zones. Each zone provides HEPA filtered supply air and the primary containment equipment required for a safe sample flow throughout the laboratory process. Additionally, we strategically place stainless steel workstations, transfer airlocks, storage and supply areas, gowning benches, and staging tables.

A HEPA filtered sample transfer airlock centrally located between the BSL-2 and BSL-3 laboratories allows for samples to be processed between rooms while maintaining robust Chain of Custody Procedures.

A stainless steel pass-through airlock chamber integrated to the glovebox has three interlocked doors that allow samples to be introduced from the outside environment directly to the Class III glovebox.

Layout

Germfree's bioGO BSL-3 Mobile Biocontainment Laboratories are designed with 4 Distinct Spaces:

Laboratory Command Center:
The Laboratory Command Center serves as the main entrance to the Mobile Biocontainment Laboratory and the main entrance door is equipped with the proper security for your application.

BSL-2 Laboratory:
This BSL-2 Laboratory area exceeds BMBL 5th edition Laboratory Facility guidelines for BSL-2 as well as World Health Organization (WHO) guidelines for BSL-3 laboratories. The room air is both supplied and externally exhausted through HEPA filters.

The room is equipped with two (2) Class II, Type A Biological Safety Cabinets to protect the product and personnel.

Ample storage space is provided by the custom casework as well as an integrated refrigerator and freezer. All casework is stainless steel with seamless welds, coved corners and radiused edges and is compatible with all standard gas and vapor decontamination systems.

A top-loading autoclave is provided for sterilization.

BSL-3 Anteroom/Shower Room:
This BSL-3 Anteroom/Shower Room allows personnel to move between the BSL-2 and BSL-3 laboratories while maintaining the highest level of containment. The room is supplied with HEPA filtered air and the exhaust air is HEPA filtered before being discharged from the laboratory.

BSL-3 Laboratory:
This BSL-3 Laboratory area exceeds the CDC NIH BMBL guidelines and the World Health Organization (WHO) guidelines for BSL-3 laboratories. The room is supplied with HEPA filtered air and the return air is HEPA filtered before being exhausted out of the laboratory.

The room is equipped with a Class III Biological Safety Cabinet (Glovebox) for receiving unknown or extremely hazardous samples.

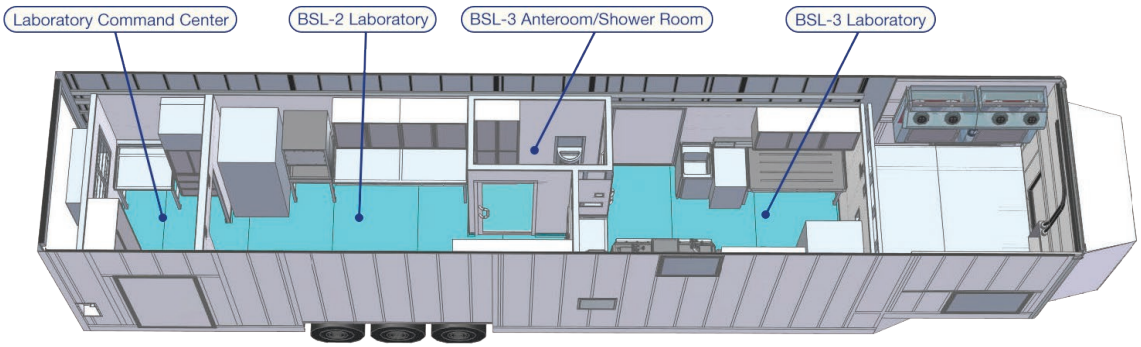
A stainless steel pass-through airlock chamber integrated to the glovebox has three interlocked doors that allow samples to be introduced from the outside environment directly to the Class III glovebox. On the outside of the laboratory, a door will open to expose the sample entry airlock. The three-door airlock also permits safe movement of items between the glovebox and the BSL-3 laboratory. (One door opens to the exterior of the lab, one into the glovebox, and one into the BSL-3 laboratory.)

The electromechanical interlock system controlled by a programmable logic controller (PLC) prevents more than one airlock door being open at any time. If any door is open, the other two will remain locked until the open door is closed. This prevents breach of containment, eliminating the risk of contaminating work spaces or the environment.

The airlock is maintained under negative pressure. The inlet air that purges the chamber is HEPA filtered. The exhaust air is HEPA filtered through the filtration system of the glovebox.

Ample storage space is provided by the custom casework as well as an integrated refrigerator and freezer. All casework is stainless steel with seamless welds, coved corners and radiused edges and is compatible with all standard gas and vapor decontamination systems.

A top-loading autoclave is provided for sterilization.



Mechanical Specifications

A heating, ventilation and air conditioning (HVAC) system is installed in the bioGO facility. The HVAC system is engineered to maintain a comfortable working temperature and humidity, and provides an inward flow of air into the laboratories. In the BSL-3 Laboratory, the mechanical ventilation also prevents recirculation to spaces outside of the laboratory.

Electrical Specifications

Connections for utility power and/or auxiliary generator inputs are provided via transfer switch.

Electrical requirements will vary be region. Germfree will configure the laboratory power to meet any international standard.

Standard Power Requirements:

110-230V, 50/60Hz, 3Ph, 160kVa
- Single point connection
- Shore power inputs are provided

Onboard Diesel Generator provided for critical systems.

Plumbing Specifications

The Trailer Laboratory Plumbing System provides fresh water to the three sinks and shower from the onboard 80 gallon (303 liter) Fresh Water tank. The two laboratory sinks have individual point-of-use sump pumps which transfer the sink waste water directly to the onboard 90 gallon (341 liter) Gray Water Waste tank. The Shower drain & Shower Room sink have one point-of-use sump pump. The sump pump outlet ports are connected to the Gray water waste tank. The waste tank's drain port is connected to the sanitary sewer to drain continuously or is closed to temporarily hold the waste water until it can be connected to a sanitary sewer line.

Controls, Communications & Recording Systems

Communication Ports
(12) Data ports are provided for network instruments, computer workstations and printers. Cables are run in shielded chases to a patch panel in the anteroom. Telephone port is provided in the Laboratory Command Center.

Construction Specifications

Germfree's mobile biocontainment laboratories are designed to be exceptionally durable. To achieve this, only the highest grade, cleanroom-compatible materials are used in the facility's construction.

The interior walls are constructed of a high performance composite that provides a seamless interior suitable for frequent wash-downs with sanitizing agents as well as gas bio-decontamination.

The floor is seamless vinyl, coved up the walls, and epoxy-sealed to the walls for ease-of-cleaning.

All work surfaces are seamless stainless steel with casework designed for gas and vapor phase decontamination. Surfaces are coved for easy spill cleanup and sanitization. Edges are rounded and polished to avoid snagging Personal Protective Equipment (PPE).

Also included are:

- Intercom System
- Fire / Burglar System
- BMS - Environmental Monitoring

Cameras and Monitors
Digital video cameras and a digital video recorder (DVR) provide perimeter security. Interior and exterior cameras provide live local video.

- CCTV system (8 cameras, DVR capable of recording 30 days of video)

Data / Phone Network
- All data terminated into a patch panel in the command center
- Computer and printer provided by end user
- Data rack can support customer supplied switch
- Cables in shielded chases
- Telephone port will be provided in the Laboratory Command Center
- Keyless entry main door

Testing & Quality Control

Germfree's bioGO Quality Process is designed to evaluate performance as well as fit and finish of every system on our mobile platform. Evaluation and testing is conducted on all components and aspects of the facility.

Germfree's Quality Control Team employs a checklist-based system during a rigorous trial period. All systems are thoroughly vetted and documented in real world conditions before the bioGO is allowed to leave our manufacturing facility.

Germfree's commitment is to provide a complete, stand-alone facility with zero defects, ready and installed with complete confidence at our customer's site.

Installation

Prior to delivery of the bioGO Mobile Facility, Germfree's service department will work with you to determine what site work needs to be completed before installation can occur.

Pre-installation Consultation can include:

- Overall Location of the unit and the surroundings
- Power supply
- Data cables and integration
- Fresh/waste water connections
- Laboratory exhaust discharge assessment
- Location grade assessment
- Accessibility

Options:

☐ Germfree site visit for installation consultation

Germfree technician/s will be on-site after delivery to assist with installation, setup, and to provide training on the startup and daily operation of the facility.

Cleaning & Bio-decontamination

bioGO Mobile Facilities receive a thorough construction cleaning before they are deployed.

Optional Service:

☐ Germfree has validated a bio-decontamination process that can be performed on location via vaporized / ionized hydrogen peroxide (VHP/IHP).

Documentation

Each mobile laboratory is delivered with a full set of as-built drawings and a factory acceptance test summary. Additional documentation, if necessary, can be requested from your project manager.

Commissioning and Qualification (C&Q)

Commissioning and qualification is performed consistent with current industry best practices.

A Commissioning & Qualification Master Plan (CQMP) is utilized to define the requirements and methodologies for the commissioning & qualification (C&Q) of the facility, utilities, systems, and automation within the scope of the build and qualification phase.

The overall C&Q approach will utilize industry standard risk-based methodology and leveraging activities. This plan will describe a systematic, efficient, and effective way of ensuring that systems and equipment function and operate according to intended use, without duplication of effort and testing.

Commissioning includes Factory Acceptance Testing (FAT), Site Acceptance Testing (SAT), Construction Q/A and Commissioning Test Plans. The Verification is the performance and documented evidence of testing completed within the commissioning process.

Qualification will be conducted for all direct impact system in scope.

Standards & Codes

Germfree's bioGO Mobile Biocontainment Laboratories meet or exceed the CDC NIH BMBL guidelines and the World Health Organization (WHO) guidelines for BSL-3 laboratories.

Project Management

A dedicated project manager will oversee all aspects of your laboratory purchase from order through delivery. In so doing, it is possible to guarantee a seamless transition into your bioGO® Mobile Biocontainment Laboratory.

Equipment

Germfree's bioGO Mobile Biocontainment Laboratories are delivered fully-equipped and ready for on-site commissioning. The standard configuration consists of:

Laboratory Command Center
- Stainless steel countertops with seamless welds, coved corners and radiused edges
- Stainless steel casework
- Security, Data and Environmental Monitoring are all accessible from the office area (see related sections)

BSL-2 Laboratory
- Custom casework provides ample storage space
- Two (2) Class II Type A Biosafety Cabinets
  - One (1) Model BBF-2SSCH
  - One (1) Model BBF-4SSRX
  - Outer cabinet and work surface are welded stainless steel with a #4 pharmaceutical grade finish
  - Front lifting viewing panel is easily removed and is gasketed to provide a proper seal when in place
  - Ergonomic front panel of the biological safety cabinet is concave permitting operator to lean into work area, enhancing user comfort
  - High capacity motor/blower system with speed control to extend the life of the HEPA filter
  - Supply and exhaust HEPA filters are parallel to work area and each other to prevent turbulence
  - Removable stainless steel work tray and tray supports facilitate easy clean up of the biological safety cabinet
  - Separate lighted power ON/OFF indicator switches for blower and lighting
  - Electrical is 115 Volt, 60 Hz
    - 220/50-60 Hz also available
  - Ten foot power cord with molded grounded plug
  - Constructed to allow for optional outside venting of exhaust air from the biosafety cabinet
- Material pass box with HEPA-purge pass-through connecting the BSL-2 Laboratory and the BSL-3 Laboratory
  - Allows the transfer of materials from either of the laboratories into the BSL-3 Laboratory or vice-versa while maintaining containment
  - Interlocked doors assure that the airlock is never open on both sides simultaneously
  - HEPA-purge cycle removes particulates within the airlock, achieving ISO Class 5 conditions before the materials are removed
- Standard laboratory refrigerator
- Standard laboratory freezer
- The preparation areas consists of stainless steel countertops with seamless welds, coved corners and radiused edges

BSL-3 Laboratory
- Class III Biological Safety Cabinet (Glovebox)
  - 4' wide, with three gloveports
  - One three-door airlock for receiving samples from outside of laboratory
- Custom casework provides ample storage space
- Standard laboratory refrigerator
- Standard laboratory freezer
- Top-loading autoclave
- The preparation areas consist of stainless steel countertops with seamless welds, coved corners and radiused edges

BSL-2 Laboratory

BSL-3 Laboratory

Quality Statement

Accountability
We will deliver our products on time, as promised, and free from defects.

Ownership
We will strive to exceed expectations at every level and we will work to make sure that each customer is satisfied with the service that they receive.

Longevity
All of our products are constructed from the highest quality materials and are designed to operate reliably for decades. We stand behind our work and take pride in our superior craftsmanship.

Our Company

Germfree has been a leading innovator in aseptic control and isolation systems since 1962.

We design and manufacture a diverse range of equipment and facilities for life science applications.

Our systems are integral to critical processes across many sectors. We specialize in complex projects and custom applications that serve the rigorous demands of our clients. Our high-specification bioGO Modular Facilities operate across the world, and are sustainable as permanent facilities in remote regions with harsh conditions.

Germfree's Mission:

Creating Environments that Serve Life Science Innovation and Advance Global Health

Germfree
4 Sunshine Blvd.
Ormond Beach, Florida, USA 32174

+1 386.265.4300

www.germfree.com