

Mobile Lab

TECHNICAL SPECIFICATIONS

1.1 Technical Specifications of Vehicles

The following information should be submitted

✓	Requirements	
	Brand type and manufacture	-1
	Technical specification	-2
	Country of origin	-3
	Year of production	-4
	Warranty Booklet	-5
	After sales services	-6
	Drawing or Pictures: To provide inside, outside, set up within the vehicle and all other necessary configurations and fittings.	-7

Features:

Interior Materials:

Walls and Ceiling - Seamless wall system

Panels come in 40 foot approx. lengths to minimize 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.

Design Excellence:

Mobile 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).

Layout:

Trailer External Dimensions approx.:

(1340mm x 2590mm x 3300mm) LxWxH

Laboratory Command Center

Internal Dimensions approx.: (1320mmx2420mm x2440mm) LxWxH

Anteroom/Shower Room Internal Dimensions approx.:

(1720 mm x 1000 mm x 2440 mm) LxWxH

BSL-3 Laboratory Internal Dimensions approx.: (3500mmx2420mm x2440mm) LxWxH

BSL-3 Mobile Laboratories are designed with 3 Distinct Spaces:

Laboratory Command Center:

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

BSL-3 Laboratory:

The Laboratory area to be as CDC and the World Health Organization (WHO) guidelines for

BSL-3 laboratories. The room has to be 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 (Glove box) for receiving unknown or extremely hazardous samples.

A stainless steel pass-through airlock chamber integrated to the glove box has three interlocked doors that allow samples to be introduced from the outside environment directly to the Class III glove box. 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 glove box and the BSL-3 laboratory. (One door opens to the exterior of the lab, one into the glove box, 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 glove box.

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.

The bidders must provide 2D & 3D rendered drawings for all types of quoted mobile lab vehicle showing location of various components, sub-assemblies for structure, interior layouts, layout of seats & furniture, medical equipments, non- Original Equipment Manufacture electrical system layout, etc. along with the technical bid.

1.2 Technical Specifications of medical equipment

Equipment for Mobile lab vehicle

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-3 Laboratory

- Class III Biological Safety Cabinet (Glove box)
- 4' wide, with three glove ports
- One three-door airlock for receiving samples from outside of laboratory
- Custom casework provide sample 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

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

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.

Also included:

- 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
- 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.

Mechanical Specifications

A heating, ventilation and air conditioning (HVAC) system is installed. 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

The mobile lab 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.

- Connections for utility power and/or auxiliary generator inputs are provided via transfer switch.
- Region-specific electrical configuration
- 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.

Lab Equipment List:

No	Requested equipment	Quantity
1	Class III Biological Safety Cabinet	1
2	Top loading autoclave	1
3	laboratory refrigerator	1
4	laboratory freezer	1
5	Glove	2 box
6	Chemistry Analyzer	1
7	CBC	1
8	Microscope	1
9	Hot air oven	1

10	Water bath	1
11	Shaker	1
12	Mixer	1
13	Coagulometer	1
14	Water Distiller	
15	Accessories and start up kits for more than 2months	1 set

Price list of all consumables, accessories & spares valid for a period of 1 years must be submitted along with the technical bid. (These prices will not be taken into account during the technical or financial bid evaluation).

1. Class III Biological Safety Cabinet

Intended use: Airstream Class III, Biological Safety Cabinet, 1200mm is offer the highest level of product, operator and environmental protection from infectious and bio-hazardous aerosols.

Class III cabinets are designed for microbiological work demanding extremely high levels containment and are therefore often used for work involving some of the deadliest biohazards, bacteria, viruses and microorganisms.

This BSC, class III is certified as per EN 12469

Neoprene Synthetic Arm-length Gauntlets: Single piece, leak-tested assembly guarantees maximum protection and flame and abrasion resistant

Silent operation or Noise pressure levels EN 12469: <51 dBA, NSF 49: <54 dBA

Pass Box equipped with interlocking doors that permits materials transfer without risk of environmental contamination

Exterior: 1.5 mm 16-gauge electro-galvanized steel with white oven-baked epoxy-polyester antimicrobial powder coated finish

Interior 1.2 mm (0.05") 18-gauge stainless steel, type 304, with 4B finish

Footswitch for pass box control

ULPA Down flow, 1st Exhaust, 2nd Exhaust Filters Efficiency: 99.999% at 0.1 to 0.3 μm and MPPS

Initial Airflow Volume: 355 cfm

Minimum Required Negative Pressure: -200 Pa

Nominal Required Negative Pressure: -275 Pa

Prefilter: Disposable and non-washable polyester fibers with 85% arrestance / EU3 rated Sentinel Silver microprocessor with LCD display, soft touch buttons, LED light indicator, continuous display of all operational parameters

It has blower hour meter

It displays laminar airflow velocity and frontal air barrier velocity

It displays ambient temperature

It has H14 filter life display, UV life display, no carbon filter

It displays only estimated filter life, no differential pressure monitoring for filter loading

It has airflow fail alarm only, no motor malfunction alarm

It warns of power failure

Optimum environmental requirements for the BSC:

Relative humidity between 20% – 90%

Temperature between 18-30°C

General requirements:

Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.

CE or FDA approved device.

Service manual (English language).

Operation manual (English language).

2. Top loading autoclave

Microprocessor based electrically heated vertical steam sterilizer
capacity: approx. 50 L.

Stainless steel.

Digital controlled temperature and pressure system.

Steam sterilization, up to 135° C

Digital temperature and pressure gauges.

Safety devices : over heat (low water cut-off switch , safety valve and release valve)

Automatic controlled sterilization cycle.

2 modes sterilization (121°c - 135°c)

Exhaust system.

Stainless steel basket.

Double wall case.

All standard accessories, consumables and parts required to operate the equipment.

Spare heating element- 1 set

A minimum of two spare lid gaskets

General requirements:

Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.

CE or FDA approved device.

Service manual (English language).

Operation manual (English language).

3. Laboratory refrigerator

Refrigerator, lab, 2°C- 8°C, 110L

Product Description: Upright refrigerator for storage of chemicals and reagents in clinical laboratory with following minimum specifications:

Compression type, CFC-free refrigerant.

Insulation material: polyurethane, CFC-free.

Fan-cooled for even distribution of air in the cabinet.

Stainless steel structure or its equivalent or inner chamber PS plate depending on the refrigerator model.

Easily adjustable shelves.

Lockable door, solid.

Electronic temperature control: 2°C to 8°C.

Accuracy, regardless of the load: +/- 1°C.

Ambient operating temperature acceptable range: Lower 10°C, upper 32 °C.

Temperature monitoring:

External digital display with actual interior temperature, minimal graduation

0.1°C.

Electronic temperature recording device: includes data logger (optional or standard, depending on the refrigerator model).

Audio and visual alarm system indicates unsafe temperatures (optional or standard, depending on the refrigerator model).

Battery back-up for audio and visual alarm system, and temperature recording device optional or standard, depending on the refrigerator model).

Other requirements:

Fitted with integrated castors.

Minimum compressor starting voltage compressor starting voltage: $\pm 10\%$

Meeting quality standard ISO 8187 / EN 28187 or similar.

Meeting safety standards: EMI 89/336EEC, 73/23/EEC and 93/68/EEC code AB1 or Similar.

Supplied with Automatic voltage regulator:

A microprocessor-controlled spike and surge protection and protection against disturbances.

Output accuracy: $\leq \pm 10\%$

Response time: $< 15\text{ ms}$ or 50 s (depending on the model)

LED display showing connected/disconnected status, voltage fluctuation and load as % of nominal current or a digital display showing temperature, voltage, electricity (depending on the refrigerator model).

Permissible overload: Permissible overload: 1000% within 60 ms protection.

Electronic fuse disconnects and reconnects automatically (optional depending on the model).

Materials:

Restricted materials: The product and its constituent components, does not contain lead (except in batteries), mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated biphenyl ethers (PBDE).

General requirements:

Input power supply: $220 \pm 20\%$ AC Volt, 50Hz, schuko.

CE or FDA approved device

Service manual (English language).

Operation manual (English language)

4. Laboratory freezer

Technical specifications:

Freezer, lab, -20C

Technical specifications:

Product Description: Upright freezer for storage of chemicals and reagents in clinical laboratory with following minimum specifications:

Deep freezer; compression type, CFC-free.

Insulation material: polyurethane, CFC-free.

Fan-cooled for even distribution of air in the cabinet.

Epoxy coated steel structure

Freezer internal volume: 268 L

Easily adjustable shelves.
Lockable door, solid.
Electronic temperature control: up to -20°C.
Accuracy, regardless of the load: +/- 1.0°C.
1 Ambient operating temperature acceptable range: Lower 10°C, upper 32°C.
Temperature monitoring:
External digital display with actual interior temperature, minimal graduation 0.1°C.
Electronic temperature recording device (standard).
Audio and visual alarm system indicates unsafe temperatures.
Battery back-up for audio and visual alarm system, and temperature recording device.
Other requirements:
Fitted with integrated castors.
Minimum compressor starting voltage compressor starting voltage: +-22%.
Meeting quality standard: ISO 8187, EN 28187.
Meeting safety standards: EMI 89/336EEC, 73/23/EEC and 93/68/EEC code AB1.
Power consumption: 280 W or more energy efficient.
Supplied with Automatic voltage regulator:
A microprocessor-controlled spike and surge protection and protection against disturbances.
Output accuracy: $\leq \pm 4 \%$
Response time: $\leq 15 \text{ ms}$
Multiple LED bar-graphs display: connected/disconnected status, voltage fluctuation and load as % of nominal current.
Permissible overload: Permissible overload: 1000 % within 100 ms.
Electronic fuse disconnects and reconnects automatically.
Materials:
Restricted materials: The product and its constituent components, does not contain lead (except in batteries), mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated biphenyl ethers (PBDE).
General requirements:
Input power supply: 220 \pm 20% AC Volt, 50Hz, schuko.
CE or FDA approved device
Service manual (English language).
Operation manual (English language)

5. Glove

a. Gloves, medical, examination, latex, powder-free, size: large, single use, box of 100.

Ambidextrous shape: fits either hand

Material: Natural latex

Powder-free

Size: large

Total length: approx. 230 mm

Palm width: approx. 110 + or - 10 mm

Thickness at fingertips of ≥ 0.08 mm

Single-use

Non sterile

b. Gloves, surgical, latex, powder-free, size: 8.5, sterile, single use, box of 50 pair anatomically shaped: 1 right-handed, 1 left-handed

Material: Natural latex

Powder-free

Size: 8.5

Total length: approximately 280 mm

Width: approximately 108 +/- 5 mm

Single-use

Sterile

6. Chemistry Analyzer

Batch process determination of routine clinical chemistry parameters

Platform: Bench-top, open, automatic system

Throughput 60 to 100 tests per hour

Sample volume should be less than 10 μ l per test

Sample type: Serum, plasma, urine

Parameters: Routine chemistry analyses (substrates, electrolytes, enzymes, lipids, immunoturbidimetric)

Method: end point, differential, fixed time, kinetic, immunoturbidimetric, multi standard

Pre-programmed and user programmable routines and profiles

Data management system built in for analysis and reporting, with storage of at least 100 patient data, including quality control and calibrators.

Results reportable via external printer.

Printed test results show sample ID, date and time

Quality control flags abnormal results, auto-calibration, auto-sampling, auto-dilution

Connects to external PC via USB

PC should be Supplied

Casing is of corrosion-proof material

Standard accessories, consumables and parts required to operate the equipment

General requirements:

Input power supply: 220 \pm 20% AC Volt, 50Hz, schuko.

CE or FDA approved device.

Service manual (English language).

Operation manual (English language).

7. Hematology analyzer

Analyzer, hematology, 18 parameter

Complete blood count (CBC), with 3-part differential, for routine hematology

Bench-top, open, automated system

Method: Photometry and impedance technology, cyanide-free colorimetry for hemoglobin counting.

Sample: Whole blood

Throughput: 50 samples per hour or more

Parameters:

Red blood cell (RBC), white blood cell (WBC), hemoglobin (HGB), hematocrit (HCT), mean cell volume (MCV), Mean cell hemoglobin (MCH), red cell distribution (RDW-SD and RDW-CV), platelets (PLT), platelet distribution (PDW-SD and PDW-CV), mean platelet volume (MPV), WBC differential (neutrophils, lymphocytes and monocytes)

Data management system built in for analysis and reporting, stores at least 100 patient data, including quality control and calibrators.

Results reportable via external printer.

Printed test results show sample ID, date and time, test results can be reported in graphs, histograms, scatter graphs

Quality control flags abnormal results, auto-calibration

Connects to external PC via USB

Casing is of corrosion-proof material

General requirements:

Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.

CE or FDA approved device.

Service manual (English language).

Operation manual (English language).

8. Microscope

Microscope, binocular, LED basic

Used for microscopic examination of clinical specimens

Upright bench-top microscope with revolving 25-degree inclined binocular tube

Binocular eyepiece: with flexibility to use in an upper and lower position, an ergonomic viewing angle of at least 15°, a tube rotatable through 360°

Eyepieces: Focusable, paired, high-quality, achromatic, wide field, 10x (FN 20) magnification with inter-pupillary distance -and one with diopter adjustment

Retractable eye guards

Mechanical reckless stage: 174 x 145 mm; travel range: 75 x 40 mm

Condenser: Abbe with iris diaphragm aperture, 0.9/1.25 NA

Illumination: LED light luminous flux at least 280 lm, with 30,000 hours operating life

Single slide holder

Coarse, and fine focusing of 0.2mm/rev

Objectives: 4x10x40x100.

100x objective must be engraved with the word 'Oil.

Observation by Bright field and with blue filter

Brightness control 0 to 100 % (linear)

Range of magnification 40 to 1000x

Reverse angle quadruple revolving nosepiece, with distinct click-stop, with rubber grip for easy handling

Reverse angle quadruple revolving nosepiece of at least 4 positions, with distinct click-stop and rubber grip for easy handling

General requirements:

Input power supply: $220 \pm 20\%$ AC Volt, 50Hz, schuko.

CE or FDA approved device.

Service manual (English language).

Operation manual (English language).

9. Hot air oven

Microprocessor based system with PID-temperature controller with integrated auto diagnostic system with fault indicator.

Digital display

Digital temperature control

Capacity: 30 ltr

Forced air circulation by quiet air turbine/Fan to ensure uniform temperature.

Fitted with load indicator and safety thermostat take over indicator lamp.

Temperature Variation ± 1 .

Temperature Range- ambient to $250 \text{ }^{\circ}\text{C}$

General requirements:

Input power supply: $220 \pm 20\%$ AC Volt, 50Hz, schuko.

CE or FDA approved device.

Service manual (English language).

Operation manual (English language).

10. Water bath

Digital temperature Control

Capacity approx.: 10 liter

Temp 30-100c, temperature Sensitivity: $\pm 0.5^{\circ}\text{C}$

Temperature sensor : PID

Body: Inner body SS and outer body MS with powder Coated.

With Mixing Unit

Safety Thermostat

Stainless Steel Racks

Flat lids With Rings Cover

General requirements:

Input power supply: $220 \pm 20\%$ AC Volt, 50Hz, schuko.

CE or FDA approved device.

Service manual (English language).

Operation manual (English language).

11. Shaker

Microprocessor controlled shaking platform

A table top model with platform size approx. 200x200mm

Speed Range 50-450 RPM

Automatic load balancing system

Continuous or timed operation with automatic switch-off

Should be provided with Automatic timer and uniform speed

General requirements:

Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.
CE or FDA approved device.
Service manual (English language).
Operation manual (English language).

12. Mixer

Rotator mixer for blood samples to ensure a homogenous mixture for clinical laboratory applications.

Rocking motion and rotation around a horizontal axis
Capacity 6 rollers with approx. 20 blood tubes of (1.5 ml-15ml tubes)
Roller size approx.: 30 x 327 mm
Designed for continuous or timed quiet operation
Adjustable speed from 5 to 100 rpm
Tilt angle
Built-in digital timer mode

General requirements:

Input power supply: 220 ± 20% AC Volt, 50Hz, **schuko**.
CE or FDA approved device.
Service manual (English language).
Operation manual (English language).

13. Coagulometer

Bench-top, open, automated system
Coagulometer measures the blood clotting parameters
Complete system with printer is required
16 incubation positions for samples (4 cells x 4 columns).
2 measurement channels.
2-4 positions for reagents (one with magnetic stirrer) and 2 pipette wells
Four independent built in timers for incubation.
Measurement possible in plasma
Automatic pipette (electronically connected or manual start up)
Backlight LCD display, 4 lines of 40 characters with built in printer
Results in seconds and in various units (% INR, Ratio, Gm/ L mg/ds, IC/ml)
Incubation and measurement wells at 37°C +/- 0.5°C
Tests: PT, PTT, TT, FIB (Clauss and PT derived), Factor II, V, VII, VIII, IX, X, XI, XII, Fletcher, VT (Venom time), APCR, AT-III (clot), Protein C (clot), Protein S (clot), Heparin, STAT (PT/PTT)

Independent built-in timers for incubation with audible alarm
Pre Programmed test setting which should be easily modifiable
Incubation time should be manageable by audible signals
Calibration Curve should be stored and printable for each parameter
Management of quality control

General requirements:

Input power supply: 220 ± 20% AC Volt, 50Hz, schuko.
CE or FDA approved device
Service manual (English language).
Operation manual (English language).

14. Water Distiller

Technical Specifications

Minimum Distilled water output: 5L/h

Maximum water supply required: 1L/min

Flow regulator for water supply

Conductivity of water produced: 2 $\mu\text{S}/\text{cm}$ or less

Automatic cut-out for low water level in the boiler

Automatic switch off when distillate reservoir is full

Heating elements should be silica glass sheathed

General requirements:

Input power supply: 220 \pm 20% AC Volt, 50Hz, schuko.

CE or FDA approved device

Service manual (English language).

Operation manual (English language).