




BIOBASE®

Professional Solutions for Clean Projects

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Brief introduction

BIOBASE, is a leading specialist in the design and construction of Clean Operating Room, ICU , P2/PCR/HIV Laboratories, PIVAS and purification engineering as well as a specialized integrated business entity engaged in Purification Equipment, Purification Engineering, Purifying Air-Conditioning System and Special Products for clean rooms, providing one-stop service from design, production, installation & commissioning, and inspection-acceptance. With well-qualified management team, high level R&D technicians, excellent construction team, BIOBASE has developed business across the world.

Following the business philosophies of "To survive on quality, to develop on technology and of "Market-guided, and service-oriented", BIOBASE is committed to provide the users with full-scale, diverse and wide-ranging services.

Contents

Air Cleanliness by ISO14644 Standard

Air Cleanliness Class	No less than the limit maxmum concentration of particulate of specific sizes					
	0.1μm	0.2μm	0.3μm	0.5μm	1μm	5μm
ISO Class 1	10	2				
ISO Class 2	100	24	10	4		
ISO Class 3	1 000	237	102	35	8	
ISO Class 4	10 000	2 370	1 020	352	83	
ISO Class 5	100 000	23 700	10 200	3 520	832	29
ISO Class 6	1 000 000	237 000	102 000	35 200	8 320	293
ISO Class 7				352 000	83 200	2 930
ISO Class 8				3 520 000	832 000	29 300
ISO Class 9				35 200 000	8 320 000	293 000

Comparison Table of Different Standards

Air Cleanliness Class	International Standard ISO 14644	Chinese Standard GB 50073	Russian Standard TOCT 50766	Japanese Standard JIS 9920	German Standard VDI 2083
/	/	/	P0	/	/
Class 1	1	1	P1	1	1
Class 2	2	2	P2	2	2
Class 3	3	3	P3	3	3
Class 4	4	4	P4	4	4
Class 5	5	5	P5	5	5
Class 6	6	6	P6	6	6
Class 7	7	7	P7	7	7
Class 8	8	8	P8	8	8
Class 9	9	9	P9	/	9

Notes:

1. The chart is the classification of air cleanliness in cleanrooms and associated controlled environments exclusively in terms of concentration of airborne particles. Only particle populations having cumulative distributions based on threshold (lower limit) sizes ranging from 0.1 μm to 5 μm are considered for classification purposes.
2. Level of airborne particulate cleanliness applicable to a cleanroom or clean zone, expressed in terms of an ISO Class N, represents maximum allowable concentrations (in particles per cubic metre of air) for considered sizes of particles.

Our Services

Professional design and planning for Clean Operating Theater and Intensive Care Unit(ICU)

Clean Operating Theater design and construction

Intensive Care Unit(ICU) design and construction

Professional laboratory design and planning (P2, P3, PCR, HIV, dental, reproductive center, clinical laboratory, radiology department, etc.)

Professional laboratory design guidance and technical advisory

Professional laboratory design and construction

Intravenous Drug Distribution Center design and planning

Intravenous Drug Distribution Center overall layout drawing

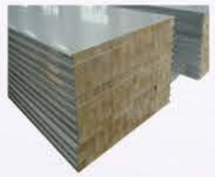
Intravenous Drug Distribution Center process design

Partial Lab Construction Materials

1. Fire-Resistance Board

1. Tongue-and-Groove Fire-Resistance Silicate Board: Stuffed with polystyrene and fire-resistance silicate material, the borad is framed by cold-formed stainless steel sheet with polyester or zinc coating. The board is smooth and tough with good thermal insulation, sound, moisture, fire and earthquake resistance and capasity of load-bearing.
2. Fire-resistance experiment: CLASS A fire resistance core material. There is no burning drip in 600s.

2. Mineral Wool Board and Magnesium Oxide Board



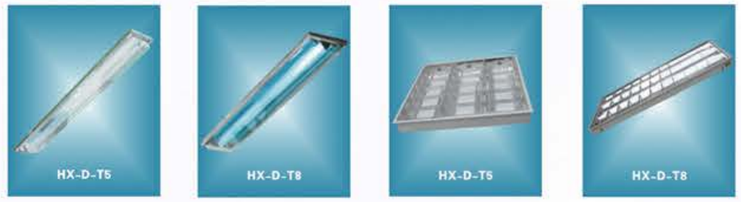
1. Tongue-and-Groove Manual Board: Core material is framed by cold-formed stainless steel with polyester or zinc coating. The board is smooth with good thermal insulation, sound, fire and earthquake resistance.
2. Core material: Inorganic mineral wool board or magnesium oxide wallboard stuffed with mineral wool. The core is CLASS A fire resistance material.

3. Wires

Wires of lighting, of disinfection lamps and of sockets are either electric wires with China 3Cs mark or ones with US UL mark.

4. Disinfection Lamps

5. Fluorescent Lamps

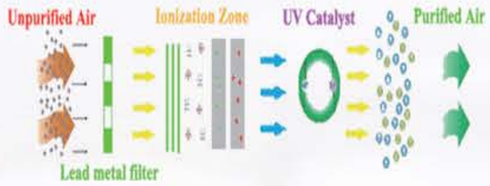


6. Floor Decorative Materials

Self-leveling Concrete

LG's PVC Floorboards

7. Supply Air Disinfection



The UV light catalyst disinfection is used in air supply system.

Advantages:

1. Small air resistance, easily to be formed.
2. Dual function of both air purification and sterilization.
3. High effectiveness when being excitated by ultraviolet radiation.

Notes: More options of materials and accessories are available. Please consult us for more details of the products.

Partial OPT Theater Construction Materials

1. 304 Stainless Pteel Panel

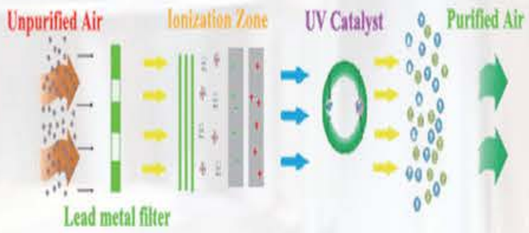
2. Electrolytic Steel Plate

3. Safeplus Board

Anti-Bacteria Wall Cladding Board

1. Anti-Bacteria Wall Clading System. Innovated by U.S Silver Protection Systems. Int, SafePlus™'s high-performance hygienic wall systems can kill bacteria, mold, fungi and other pathogenic microorganisms, including antibiotic-resistant bacteria MRSA, VRE, etc due to the active antibacterial ingredient inside.
2. It is an ideal material for wall cladding and bench surfaces.
3. High performance in bacteria resistance. The bactericidal effect of SafePlus is up to 99.99%.
4. Long service life.
5. Good light & weather fastness.
6. Harmless, environmentally-friendly material.
7. Preventing cells from resistence to drugs.

4. Supply Air Disinfection



The UV light catalyst disinfection is used in air supply system.

Advantages:

1. Small air resistance, easily to be formed.
2. Dual function of both air purification and sterilization.
3. High effectiveness when being excited by ultraviolet radiation.

Projects and Construction Procedures

1. Providing preliminary quotation according to floor layouts and customers' specification requirements.

2. Finalizing the contract and documents concerning cooperation.

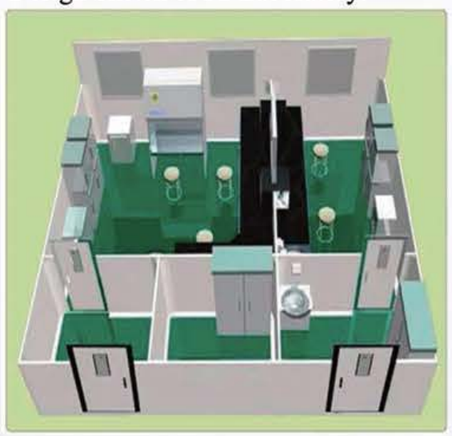
3. Working out detailed construction drawings and determining the final scheme.

4. Preparing before the start of construction and confirming construction schedules and related issues.

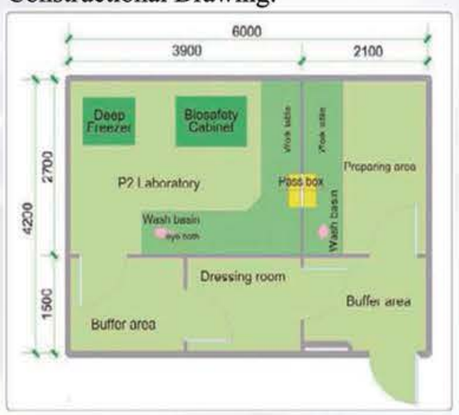
P2 Laboratory

P2 Laboratory is a Biosafety level 2 Laboratory. P2 Laboratory is mainly used for primary health service, diagnosis and research. The hazard level of experiment subject is Level II.

Design Sketch of P2 Laboratory:



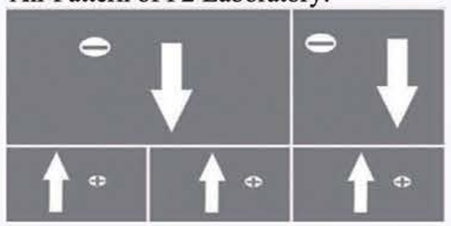
Constructional Drawing:



Installation Requirements

1. The minimum installation space for a P2 Laboratory is 6 .0 * 4.2 * 3.4 m (L* W * H).
2. The floor should be flat with a variance of less than 5mm/2m .
3. Preliminary site preparations must include:
   - Wiring for 220 V/ 110V, 50Hz, 20KW
   - Plumbing connections for water and drains
   - Connections for network and telephone wiring

Air Pattern of P2 Laboratory:



Construction Picture:

PCR Laboratory

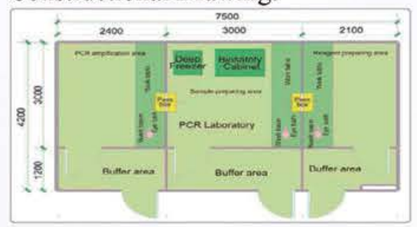
The PCR Laboratory typically is involved with activities that include sample preparation, PCR reaction assembly, PCR execution and post-PCR analysis .

Installation Requirements:

1. The minimum installation space for a PCR Laboratory is 7 .2 * 4 .2 * 3 .4 m (L* W * H).
2. The floor should be flat with avariance of less than 5mm/2m.
3. Preliminary site preparations must include:
   - Wiring for 220V/110V, 50Hz, 20KW
   - Plumbing connections for water and drains
   - Connections for network and telephone wiring

Design Sketch of PCR laboratory:

Constructional Drawing:



HIV Laboratory

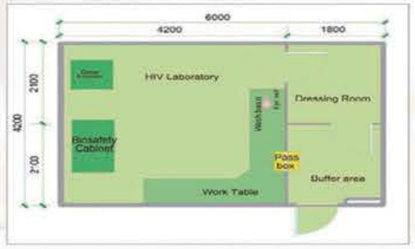
HIV Laboratory is HIV antibody test lab. It can be divided into HIV screening laboratory and HIV identification laboratory.

Installation Requirements:

1. The minimum installation space for a HIV Laboratory is 6.0 * 4 .2 * 3 .4 m (L*W*H).
2. The floor should be flat with avariance of less than 5mm/2m.
3. Preliminary site preparations must include:
   - Wiring for 220V/ 110V, 50Hz, 20KW
   - Plumbing connections for water and drains
   - Connections for network and telephone wiring

Design Sketch of HIV Laboratory :

Constructional Drawing:



Central Sterile Supply Department(CSSD)

Definition of Central Sterile Supply Department

CSSD is the place for sterilization and disinfection, the transit of sterile objects and the important warranty for the quality of health care services. It is closely related to infection within hospitals and has indivisible connection to various clinical divisions.

Layout Requirement for Central Sterile Supply Department

CSSD, based on the working procedures, is divided into three sections: Contaminated Section, Cleaning Section and Sterile Section. These three need to be strictly separated. Suitable equipment, walls or barriers with eye-catching notices can be applied to secure no cross sections.

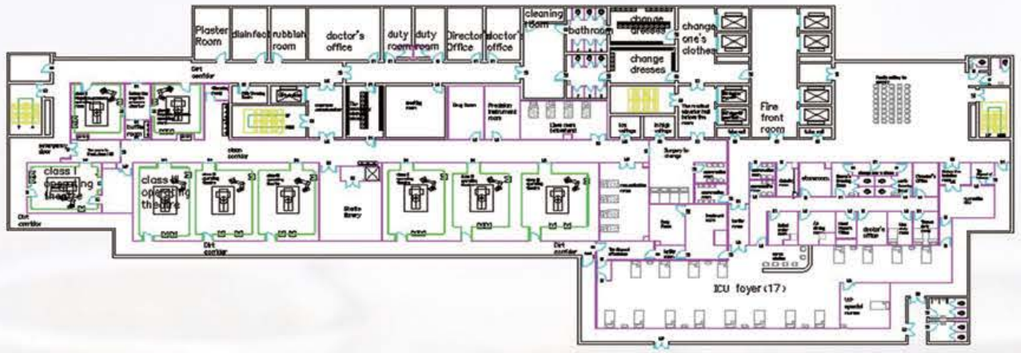
Environment Requirement for Central Sterile Supply Department

Central air conditioning system and positive-pressure air purification system need to be adopted in the Sterile Section. The ambient temperature is between 18~22℃ and the humidity is between 35%~60%.

Intensive Care Unit (ICU)

Admitting patients suffering from breathing, circulation, metabolism and other multiple organ failure from Internal Medicine, Surgery and other departments, ICU focuses on doing powerful overall management in breathing, circulation, metabolism and others for patients.

1. Under the framework of humanism, taking advantage of high-tech achievements in modern society to establish an efficient and fast medical system, thereby giving impetus to ICU development.
2. Using research achievements of Ergonomics, Psychology, Sociology and other related borderline science, broaden the design denotation of "people-oriented" , set up the theory of humanized design in the design of hospital systematically.
3. People-oriented ICU ward design should be based on people's psychological activity, built on physical characteristics, guided by behavior activity, understanding people's all requirements of the hospital, truly realizing the feeling of "at home".



Pharmacy Intravenous Admixture Service(PIVAS)

PIVAS:

PIVAS has changed the original condition that the Intravenous fluid configuration is scattered in the open environment of ward treatment room. With PIVA, the configuration can be proceeded on Class 100 platform in Class 10,000 airtight environment by full-time technical staff, making doctors' excellent skill and drug efficacy reach their highest simultaneously.

Function:

Normalized preparation, reduce particle pollution, improve safety.

Develop clinical pharmacy, promote rational drug use.

Reduce drug waste, decrease medical cost.

Reduce medication errors.

Clean Operating Theater

Advantages:

1. Preventing pollutant outside from entering the operating theater
2. Purifying air which flows into the operatating room
3. Maintaining the state of positive pressure
4. Rapidly and effectively exhausting the pollution right inside the room
5. Controlling the pollutant and decreasing the possibility of pollution
6. Sterilizing and disinfecting objects and for fitting
7. Immediately disposing polluted objects.

General Clean Operating Theater

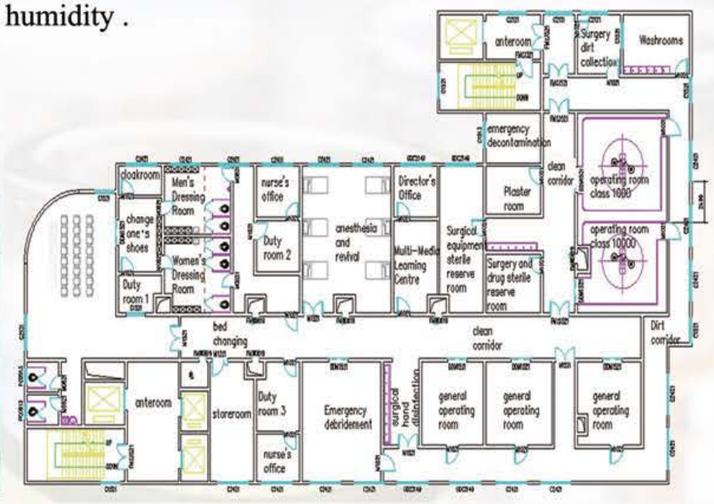
The General Clean Operating Theater is for general surgery(excluding Class A surgery), gynecological operations, etc.

Maximum Average Concentration of Settlement Bacteria : 75~150 / m^3

Air purification: Class 10,000

Air purified by primary, medium and HEPA filters in sequence flows through the outlet on the ceiling into the operating theater and purified clean air presses the polluted air out of the outlet, to make sure the theater remains clean.

Laminar Flow Operating Theater adopts air purification technologies to diversely controls and treats microbiological pollution,aiming to ensure that the cleanness of the room is suitable for various operations and to provide a clean and comfortable operating conditions with proper temperature and humidity .



The Solution for Negative Pressure Operating Theater

1. Negative pressure operating room should be established when performing operation on patients with infectious diseases.
2. Method:Effective means such as increasing the number of exhaust fan to adjust the exhaust air rate should be adopted, ensuring the operating rooms are under negative pressure.
3. Result: Airflow in clean area is controlled via negative pressure difference, absorbing harmful air and purifying indoor air.
4. Conclusion: Negative pressure operating rooms can fundamentally control and solve air pollution problems in operating rooms.
5. A negative pressure operating room is usually equipped with a ventilation system, which ensures that air from the corridor or any adjacent area flow into the negative pressure operating room and the contaminated air will not escape from the operating room.

Class 1,000 Manufacturing Clean Room

Primary Specification Requirement:
1. Air Changes Rate: 15~25/h,
2. Pressure Difference: Main workshop to adjacent rooms≥5Pa.
3. Temperature: Winter: >16℃±2℃
Summer:<26℃±2℃
4. Relative Humidity:5~65%(RH)
5. Noise: ≤65dB(A)
6. New air supplement: 20%~30% of total air supply
7. Illumination:≥300Lux

Class 100,000 Manufacturing Clean Room

Class 100,000 Clean Room adopts the following measures:
1. Air conditioning system must consist of three-level air filtration: primary efficiency, middle efficiency and high efficiency filtration, securing that the clean air flow into rooms and diluting polluted air indoors.
2. The pressure indoors should be maintained to prevent the interference of outside air. General industrial clean room requires a pressure difference of 5~10Pa between the indoor and outdoor.
3. Building envelope must be of good air tightness. The surface is smooth, dustless and air-tight.

Biosafety Laboratory

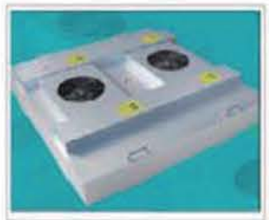
Biobase Biosafety Laboratory can be transported as a whole unit.It will save you much time, effort and cost associated of traditional lab design and construction. Customer can use it directly after connectting the power and water source. In general, Biobase Biosafety Laboratory includes three typical models: HIV Laboratory, P2 Laboratory and PCR Laboratory, and these three distribution in other comprehensive laboratory, and other laboratory systems.

Features:

1. Complete laboratory installation from a fully engineered and standardized design. This allows rapid installation and eliminates the time and cost for developing a custom laboratory design.
2. Design addresses air flow and sample handing requirements to control contamination.
3. System includes an operation procedure that provides information on lab operating principles, equipment recommendations and organization. safety provisions/considerations and maintance; information that provides a quick start toward development of your own customized analysis, quality control, maintance and regulatory compliance procedures.
4. Laboratory partitions are constructed of high quality, hard-surfaced materials including aluminum alloy hardware and wall panels.
5. Biosafety Laboratory is supplied completely with built-in work surface, interior lighting, air purification systems, air conditioning system, water system, sample handing airlocks and a fully plumbed preparation sink. Biosafety Laboratory is fully wired with electrial, telephone and computer net work.
6. A sophisticated contamination control system-comprised of segregated work areas with individual air-handing. These areas are well-designed to reduce the possibility of sample contamination.

Design Considerations:

Overall layout is in good style, establishments are self-contained, arrangement is reasonable. Intend to provide a well-lighting and comfortable working environment.



Fan Filter Unit
Supply Clean Air

Adjustable Airflow
Vents

Stainless Steel Sink with
Hands-Free Water Faucet

Special Designed Filters
Remove Dust and Other
Particulates

Centrally Located
Switch and Circuit
Breaker Panel

Modular Aluminum
Construction Ensures
Airflight Seams

Ergonomically Designed
Work Areas Increase
Comfort and Efficiency

Each Lab Equiped
with Telephone and
Internet Connections

UV Lamp Control
Cross-Contamination

Secure Electronic Airlock
for Sample Transfer

Safe and Hermetic

Domestic Projects Cases

Biochemistry and Immunology Hall

Oriented by the concept of patient-centered, base of quality and services and scientific principles, biochemistry laboratories strive to provide accurate, objective timely and affordable services and to provide experimental evidence for the disease prevention of clinical diagnosis and scientific researches.

Blood Sampling Window

There are enough blood windows and staff to ensure the waiting time is no longer than 15min and the queue is no more than five people. At the waiting area, it is recommended to install systems indicating the blood collection procedures and queue management system. Separated windows will protect patients'privacy and avoid mutual interference between windows .

Laboratory Clean Corridor

Shandong University Nan Shan Branch of Qilu Hospital

Shanxi Jincheng Central Blood Station

Hebei Julu Hospital









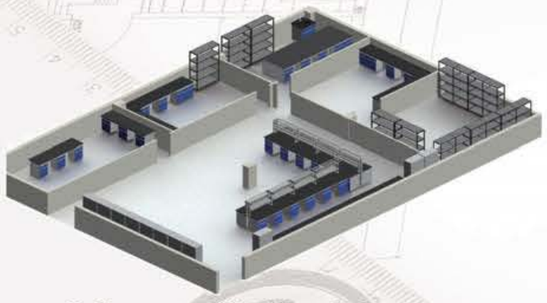
Achievement Display

Partial Facility

Lab Workbench

1. Table: 12.7mm thick physiochemical board, black, thickened double-layer outer edge in an arc, Countertops connection designed to prevent fluid leakage, with water stop sink around the edge, depth of 3mm, drip line below the Countertop.
2. Steel structure: The static load> 250 kg , service life > 15 years. Fixed with 304 stainless steel screw rod to the table.
3. Cabinet: 18mm thick melamine double laminated board. Drawers and section of doors are edge-sealed by “E”-shaped aluminum groove, solid and reliable bonding, fireproof, waterproof, mothproof. The rest parts adopt high quality 2mm thick PVC, waterproof and seal side treatment. No warp or crack, moisture resistance, heat resistance, corrosion resistance, firm texture, smooth surface, load resistance and impact resistance.
4. Hinge: 110 degrees DTC self-closing hinges, good elasticity, appearance, without noise , corrosion resistance, long service life.
5. Rail: DTC three sections mute rail, destructive testing up to 50,000 times, corrosion resistance, load-bearing, and durable.
6. Handle: Aluminum bar-shaped handles, molding , thickness of 1.5mm.
7. Adjustable feet: special stainless steel adjustable feet, adjustable height 30~40mm (± 5%), screw diameter 12mm, load-bearing, moisture resistance, bacteria resistance, corrosion resistance, easy to adjust the level, nice appearance, user-friendly design .

Power: steel tower type power box, adopting multi-functional safe outlets of international brands according to the matching requirements, dust resistance, splash resistance, corrosion resistance.



Laboratory Workbench Layout

Laboratory Workbench with Wall Cabinets

Island Laboratory WorkBench with Test Tube Racks

Metal-Wood Laboratory Workbench

Stainless Steel Laboratory Workbench

Biosafety Cabinet

When operating on the primary cultures, bacteria strains and diagnostic specimens etc infectious lab materials, biosafety cabinet is used to protect personnel, laboratory environment and sample, avoiding exposure to infectious aerosol and spills maybe generated from the above operation.

Model:

BSC-1100IIA2-X	Biosafety cabinet 30%	air exhaust
BSC-1100IIB2-X	Biosafety cabinet 100%	air exhaust
BSC-1500IIA2-X	Biosafety cabinet 30%	air exhaust
BSC-1500IIB2-X	Biosafety cabinet 100%	air exhaust
BSC-1800IIA2-X	Biosafety cabinet 30%	air exhaust
11231 BBC 86	Biosafety cabinet 30%	air exhaust

Laminar Flow Cabinet

Features:

Horizontal and vertical laminar flow

Make use of adjustable fan unit system, light touch switch to adjust voltage, keep wind speed of working area always in ideal state.

Two person single side and two person double sides operation, flexible and convenient.

Workbench adopts imported stainless steel, with excellent acid and corrosion resistance.

Adopting international standard aluminum frame deep-plate HEPA filter, with excellent dust holding rate.

The main body uses 1.2 mm high quality cold-rolled steel with anti-bacteria powder coating.

Pass Box

A blowing /cleaning pass box is a kind of auxiliary device of clean room, mainly used to transfer small items between rooms of different clean levels. It reduces times of opening door and prevents air convection between different rooms, minimizing the pollution.

1. The box is made of high-quality sheet steel with powder coating, or made of stainless steel.
2. Stainless steel working plate, flat and smooth.
3. The device can be divided into three major types: general type, electrical interlock type, mechanical interlock type.

UV sterilization function and lock handle function are optional.

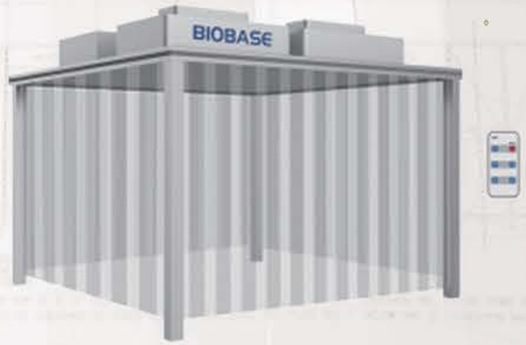
Clean Booth(Down Flow Booth)

Introduction:

Clean booth is a kind of air purifying equipment proving partial high clean environment. It's the easiest and fastest way to build a simple clean room. Equipped with a lot of clean level and space collocation, it can be designed as request. Main characteristics: simple use, good flexibility, easy installation, short construction time, and movable. It can be installed in part of clean room of general level which requires high cleanliness to save cost.

Features:

1. It can be used singly or combined.
2. Compared with civil type and fabricated type clean room of hundred clean level, it has low running cost and fast effect, and can be easily installed.
3. Modular construction, easy to increase clean level, good expansion and reusable, convenint movement(Universal wheel can be installed).
4. Customized design is welcome.



Reference Picture

Dispensing Booth(Sampling or Weighing Booth)

Introduction:

Dispensing booth is a kind of partial purifying equipment, for filling, refilling, weighing and sampling of raw material and compounds. It is provided with a HEPA filter, which prevents the airborne dusts by down draught technique. The unit eliminates contamination to protect the operator and the surrounding environment.

Dispensing booth is also called sampling booth or weighing booth.

Features:

1. Automatic changeable frequency system monitors the air velocity to ensure its stability in the working area.
2. Differential pressure gauge is equipped to real-time monitor the filters.
3. Unique designed air duct effectively controls the noise.
4. Uniform flow design of main work area can protect the operators, prevent environmental pollution and cross contamination of products.
5. Intelligent control mode and alarm system ensure the reliability of running.
6. Smooth transitions of wall and ground can eliminate the blind angle.
7. Customized design is welcome.

Reference Picture

Air Shower

Introduction:

Air shower is a necessary passage for person entering clean room in order to minimize the amount of particulate contaminant, achieve workplace strict clean purification standards. Personnel move through the air shower while particulate contaminants are blew off by the clean high speed air. So the duct can't be brought into clean area.

Features:

1. Photoelectric sensor , automatic blowing.
2. Desinged with circulation wind to ensure the cleanness of shower area under non-shower status.
3. Double doors with electric interlock.
4. LED display with adjustable blowing time(0~99min).
5. HEPA Filter, Class 100 cleanness.