



# Equipment Selection Guide

## Choosing the right filtration solutions to complete your laboratory

### *Safety, efficiency, and effectiveness:*

Ductless fume hoods, laminar flow hoods, and biological safety cabinets are all designed to meet the needs of highly specific, extremely diverse situations. Harm to the operator, process, or both may occur if incorrect laboratory filtration products are used for certain applications. Understanding which hood is right for you takes experience and an intricate knowledge of the science behind laboratory filtration.

The Air Science® Laboratory Desk Reference is a resource to help you understand the benefits and limitations of each type of laboratory filtration device for certain applications. Our goal is to help you create a safe laboratory environment with equipment that is efficient in operation and effective in process.

We recommend talking to a fume hood specialist prior to any new equipment purchase to ensure all of your goals are met.

# Equipment Selection Guide:

Choosing the right filtration solutions to complete your laboratory

## 2

→ Selection Guide




→ Ductless Fume Hoods

→ Laminar Flow Hoods

→ Biological Safety Cabinets



## Equipment Selection Guide

	 <b>Ductless Fume Hoods</b>	 <b>Laminar Flow Hoods</b>	 <b>Biological Safety Cabinets</b>
<b>Applications</b>	Pharmaceutical Forensics Veterinary Work Dental Work Histology	Microbiological Cell Cultures Medical Testing Medical Devices Semiconductors	Life Science Biological Protocols Sterile Preparation
<b>Vapors</b>	Yes (with carbon filter)	No	No
<b>Particulates</b>	Yes (with HEPA filter)	Yes	Yes
<b>Protection</b>	Operator	Product	Operator and Product
<b>Air Science Products</b>	Purair Basic Purair Advanced	LF Series Horizontal Hoods LF Series Vertical Hoods Purair PCR Workstations	Purair BIO
<b>Warnings</b>	Filters are application-specific	Not for use with harmful contaminants.	Not for use in explosive environments or with harmful vapors.

# Equipment Selection Guide:

Choosing the right filtration solutions to complete your laboratory

3

- Selection Guide
- Ductless Fume Hoods
- Laminar Flow Hoods
- Biological Safety Cabinets



## Ductless Fume Hoods: Safety and Flexibility

Ductless fume hoods are available in configurations that meet the diverse application needs and space requirements of today's laboratories. Continuous airflow across the work surface draws contamination away from the user and through a multi-stage carbon filter, recycling clean air back into your laboratory.

### APPLICATIONS:

Applications for ductless fume hoods exist in many markets, including pharmaceutical compounding, forensics, veterinary, dental work, and histology. Some industrial processes and medical device manufacturing processes can also be enclosed in ductless fume hoods.





## Ductless Fume Hoods: Safety and Flexibility

### BENEFITS:

**Mobile** – Ductless fume hoods are stand-alone units that can easily be moved anywhere in the laboratory.

**Low Cost Installation** – Cost of additional ductwork and utilities is eliminated. Ductless fume hoods also have a small overall operational footprint.

**Customizable** – Ductless fume hoods can be configured to meet the specific needs of many applications. Filter options are available to accommodate chemicals from a large number of chemical families.

### LIMITATIONS:

The applications for ductless fume hoods are broad in scope, but there are some limitations to keep in mind when considering the purchase of new ductless equipment.

**Light-Duty Applications** – Some ductless fume hoods are only designed for occasional use or process-specific applications. No extreme heating or corrosive reactions should be carried out in these hoods.

**Chemical Specificity** – The filters used in ductless fume hoods are specifically matched to the chemicals and concentrations of your process. Limited amounts of different chemicals should be used in relatively low volumes and at low exposure times to maximize the life of your filters and the effectiveness of your hood.

**Process Protection** – Most ductless fume hoods are designed to protect the operator from exposure to chemicals, which in turn does not protect the process from outside contamination. If your process is susceptible to contamination from outside sources, other options –such as isolators or laminar flow hoods – are likely more appropriate choices of protection.

# Equipment Selection Guide:

Choosing the right filtration solutions to complete your laboratory

5

- ➔ Selection Guide
- ➔ Ductless Fume Hoods
- ➔ Laminar Flow Hoods
- ➔ Biological Safety Cabinets



## Ductless Fume Hoods: Safety and Flexibility

### PRODUCTS:



**Purair® Basic** – compact and ideal for use in laboratory environments where space is limited or where only small volumes of harmful substances are handled. Ideal for a variety of uses including compounding and forensics.



**Purair Advanced** – ductless fume hoods and chemical processing workstations available in 21 standard sizes, in metal or polypropylene construction, totaling 42 standard models. Perfect for pharmaceutical, research, and medical laboratories.

**Contact Air Science today to speak with a fume hood specialist about your application.**

*\*The above information serves only as a guideline and additional information and considerations are required prior to making a new fume hood purchase.*

# Equipment Selection Guide:

Choosing the right filtration solutions to complete your laboratory

6

- Selection Guide
- Ductless Fume Hoods
- Laminar Flow Hoods
- Biological Safety Cabinets

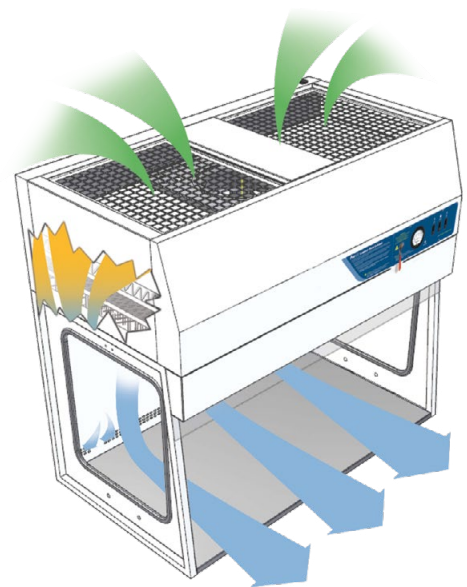


## Laminar Flow Hoods

Laminar flow hoods produce a constant, unidirectional airflow across the work surface, incorporating design elements to minimize air turbulence and dead zones while removing particulate matter that may affect results.

### APPLICATIONS:

Laminar flow hoods are best suited for applications that need to protect the process from contamination by particulates. Common applications include microbiological testing, cell cultures, clinical/medical testing, medical device production, and semiconductor protocols.



# Equipment Selection Guide:

Choosing the right filtration solutions to complete your laboratory

## 7

→ Selection Guide

→ Ductless Fume Hoods

→ Laminar Flow Hoods

→ Biological Safety Cabinets



## Laminar Flow Hoods

### BENEFITS:

**Minimizes Contamination** - Air passes through a HEPA filter then uniformly through the cabinet interior to protect the work from unfiltered air. The airflow is oriented to exhaust airborne particulates introduced by the user.

**Customizable Filtration** - Employs the Air Science exclusive Multiplex HEPA filtration technology to sustain the contamination-free environment.

**Compact** - Laminar flow hoods are designed for desktop use, or may be installed on an optional base stand or mobile cart.

### LIMITATIONS:

Horizontal laminar flow hoods are best for applications that require less turbulence on the work surface as the airflow does not hit any obstruction until exiting the fume hood. Horizontal laminar flow is also best for applications with primarily small utensils and equipment that will not cause airflow disturbance. Finally, applications that require the utmost in contamination control should use horizontal flow because hands and gloves are positioned downstream of the sample during normal operation.

Vertical laminar flow hoods perform best for applications that require the use of large equipment on the work surface as vertical airflow produces less turbulence when hitting large items within the airflow. Vertical laminar flow also provides a taller, larger work space because the filters are generally positioned on top of the hoods.

**Hazardous Contaminants** - If your application requires soldering fumes or harmful powders, laminar flow hoods SHOULD NOT be used. Only use laminar flow hoods for handling non-hazardous powders or nuisance odors being generated on the work surface.

# Equipment Selection Guide:

Choosing the right filtration solutions to complete your laboratory

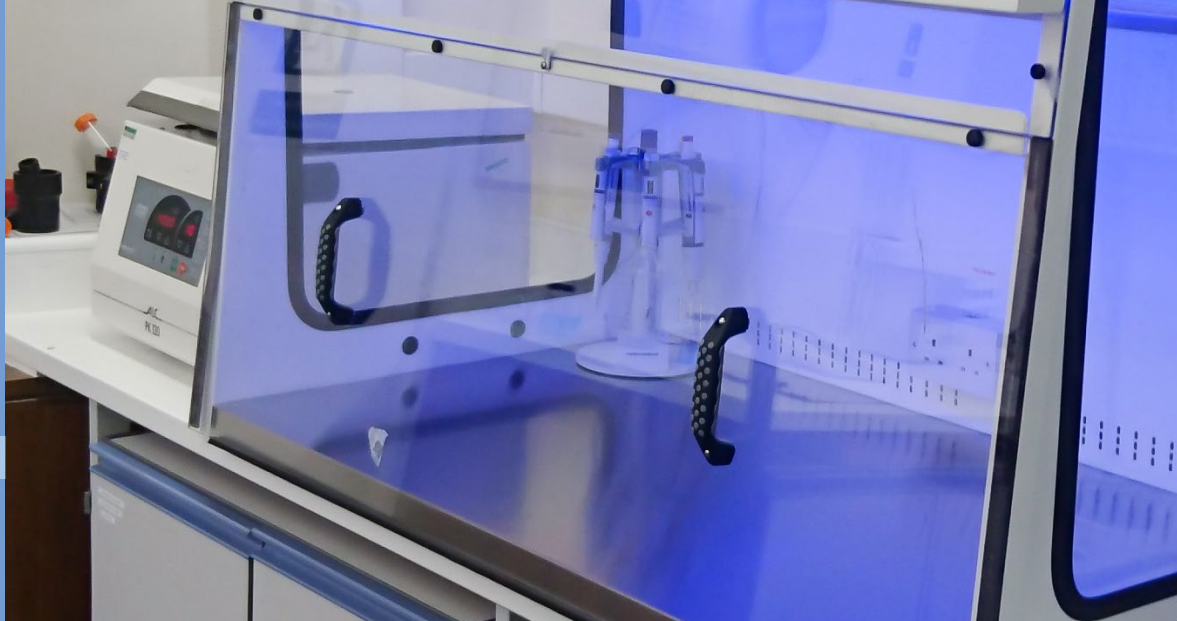
8

→ Selection Guide

→ Ductless Fume Hoods

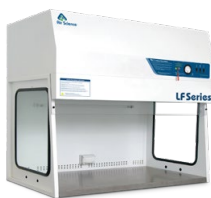
→ Laminar Flow Hoods

→ Biological Safety Cabinets



## Laminar Flow Hoods

### PRODUCTS:



**LF Series Laminar Flow Hoods** – Air Science Purair Laminar Flow Cabinets are a series of high-efficiency products designed to protect equipment and other contents of the work zone from particulates. Ideally suited for use with non-hazardous contaminants and when flexible access to the equipment in the work zone is desired.



**Purair PCR Workstations** – The Purair PCR laminar flow cabinet employs the Air Science Multiplex™ HEPA filtration technology to create a safe, energy-efficient contaminant-free environment. Perfect for use during PCR amplification to guard against non-hazardous contaminants.

**Contact Air Science today to speak with a fume hood specialist about your application.**

*\*The above information serves only as a guideline and additional information and considerations are required prior to making a new laminar flow hood purchase.*



# Equipment Selection Guide:

Choosing the right filtration solutions to complete your laboratory

9

- ➔ Selection Guide
- ➔ Ductless Fume Hoods
- ➔ Laminar Flow Hoods
- ➔ Biological Safety Cabinets



## Biological Safety Cabinets

Biological Safety Cabinets are designed to protect individuals from a variety of biological particulates. Class II Type A2 biosafety cabinets contain Biosafety Level 1-3 agents by maintaining negative pressure inside the cabinet during operation to prevent contaminants from escaping the work area.

### APPLICATIONS:

Biological Safety Cabinets are ideal for life science researchers, various biological protocols, and for sterile product preparation in a number of industries. Dual HEPA filtration protects the operator and samples. 70% of the contaminated air flows through the supply HEPA and back into the work zone, while the remaining 30% goes through the exhaust HEPA and into the room.

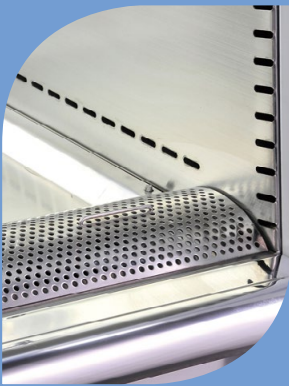


# Equipment Selection Guide:

Choosing the right filtration solutions to complete your laboratory

## 10

- Selection Guide
- Ductless Fume Hoods
- Laminar Flow Hoods
- Biological Safety Cabinets



## Biological Safety Cabinets

### **BENEFITS:**

**Simple Installation** - The biosafety cabinet is self-contained and does not require venting to the outside. Units are portable and may be moved from one location to the next with minimal downtime and without filter changes.

**Efficiency** - Because filtered air is returned to the room, no demands are required of the facility HVAC capacity for make-up air.

**Cost Effective** - Facility ductwork, HVAC and construction costs are eliminated.

### **LIMITATIONS:**

**Vapors and Gases** - Biological safety cabinets are not designed to protect users or product/samples from hazardous vapors or gases.

# Equipment Selection Guide:

Choosing the right filtration solutions to complete your laboratory

11

- Selection Guide
- Ductless Fume Hoods
- Laminar Flow Hoods
- Biological Safety Cabinets



## Biological Safety Cabinets



### PRODUCTS:

**Purair BIO** – Class II Type A2 biosafety cabinet which minimizes and contains Biosafety Level 1-3 agents, maintaining negative pressure to provide multiple levels of protection and user-friendly operation.

Contact [Air Science](#) today to speak with a fume hood specialist about your application.

*\*The above information serves only as a guideline and additional information and considerations are required prior to making a new biological safety hood purchase.*



120 6th Street • Fort Myers, FL 33907  
T/239.489.0024 • Toll Free/800.306.0656 • F/800.306.0677  
[www.airscience.com](http://www.airscience.com)

