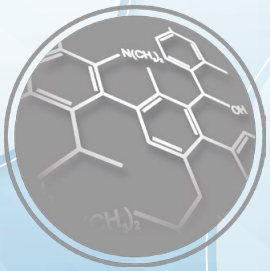
Purair® NANO

Ductless Nanoparticle Containment Enclosures

24 • 36 • 48

"The World's Most Extensive Selection of Ductless Containment Solutions."



— Purair
P5-24-XT (NANO)

Provides Effective Containment for
Personnel and Environmental Protection

Meets or Exceeds OSHA, ANSI and
other International Standards

ENERGY STAR PARTNER

GSA Schedule
Contract GS-07F5832P

Air Science®

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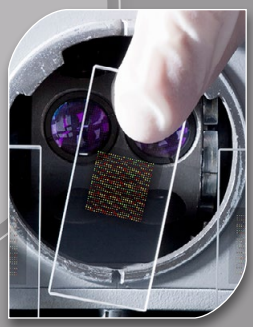
Purair NANO

Ductless Nanoparticle Containment Enclosures

- *Protects the operator from nanomaterial particles (less than 100nm in size) encountered during processing of carbon nanotubes, lithium batteries, and rare earth metals. SafeSwitch™ Filter Shutter System (optional) for safer bag-in/bag-out filter exchange.*
- *Innovative filter clamping eliminates bypass leakage.*
- *Exhaust canopy allows for thimble ducting to the facility exhaust system.*
- *Airflow monitor with low airflow alarm built-in.*

Purair P5-36-XT (NANO). Shown with powder scale. Scale not included.



APPLICATIONS

- Research
- Academic
- Pharmaceutical

INTRODUCTION

Nanotechnology continues to advance in a variety of industries, including aerospace, research, pharmaceutical, and academia, yet few effective containment solutions for particles that range in size from 1nm to 100nm exist. The Purair® NANO enclosure is designed to contain nanomaterial particles that are 100nm or less in diameter (ultra fines). With a stainless steel infrastructure, powder coated FFU, and dual filtration options to ensure superior containment, the Purair NANO provides a safe work environment at an affordable price. At the heart of the Purair product line is innovative ductless technology.

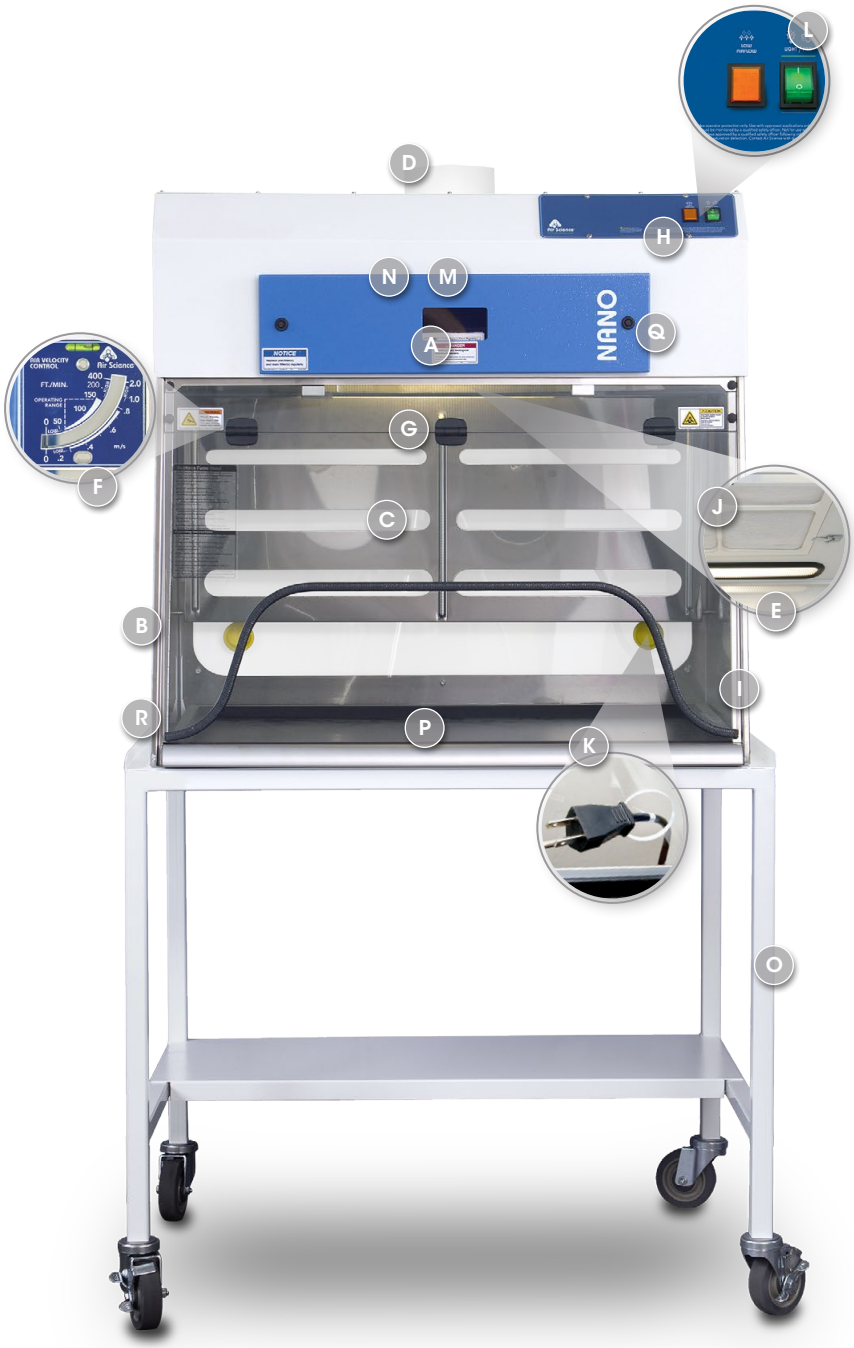
Made in the U.S.A.

DUCTLESS FILTRATION:
The Eco-friendly Choice

Some sources indicate that due to their extremely small size, nanoparticles have characteristics more similar to a gas than a solid. As nanoparticles diffuse, they collide with air molecules and move in a random pattern. For this reason, diffusion filtering is most commonly recommended to capture nanoparticles and nanomaterial.

Independent industry experts agree that some nanoparticles are small enough to escape through the HEPA filter. Because the Purair NANO uses a HEPA filter as the main filter, a supplemental carbon filter can be used to trap chemical vapors emitted from the work process. The carbon filter does not capture nanoparticles.

- **Environmental Benefits.** Air Science ductless enclosures isolate and trap powders and particulates to prevent ecological impact through release into the environment.
- **Safer Filter Replacement.** The optional Air Science SafeSwitch bag-in/bag-out filter replacement system minimizes exposure to filter contaminants when removing used filters for insertion of new filters.
- **Carbon Safety Filter.** The carbon safety filter can be combined with the HEPA filter to prevent infiltration of chemical vapor byproducts into the work area, thereby eliminating the need for a ducted fume hood.
- **Versatile.** The Purair NANO includes a factory installed exhaust canopy that allows for thimble ducting to the outside.
- **Easy to Install.** The ductless nanomaterial enclosure is self-contained and does not require venting to the outside. The cabinet is portable and may be moved from one location to the next with minimal downtime and without filter changes. Set-up, operation and filter maintenance are straightforward.
- **Energy Efficient.** 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.
- **Safe to Use.** Cabinet airflow and face velocity protect users from incidental exposures to nanomaterial.
- **Self-testing.** Electronic airflow monitoring assures continuous safety.



PRODUCT FEATURES:

A. Filter I.D. Window: A strategically placed front cover window shows the installed filter part number and installation date to encourage timely filter replacement.

B. Glass Side Panels: (Optional) Purair® NANO hoods are available with glass side panels which allows greater visibility and ambient lighting into the work area.

C. Rear Internal Baffle: Rear baffle provides smooth horizontal airflow pattern. Removable for easy cleaning.

D. External Exhaust Connection: Removable 6" diameter exhaust connection port allows ducting to the outside and comes standard on every Purair NANO.

E. Built-in Lighting: Hoods include standard 60W lights to fully illuminate the work surface.

F. Air Velometer: (Optional) An analog air velocity meter in the field of vision of the user.

G. Hinged Front Sash: When closed, the cabinet sash protects the contents from inadvertent external contact, and better isolates the air within. The sash is easy to open and close and features a self-locking feature.

H. Control Panel: Electronic controls and displays include switches for the blower and low airflow alarm. Ergonomics, safety and aesthetics all come together with the 10° pitch of the face.

I. Stainless Steel Support Frame: The 304 grade stainless steel provides excellent strength and chemical resistance and is cleanroom compatible. The satin finish enhances illumination.

J. Electrostatic Pre-Filter: The 99.5% effective electrostatic pre-filter is accessible from inside the chamber to contain the release of any particulates that it traps. The pre-filter can be changed while the unit is operating to prevent operator exposure to chemical vapors.

K. Pass-Through Ports: Electrical cords and cables are safely routed into the cabinet through 1 5/8" diameter ports on the back and side walls.

L. Airflow Alarm: A continuous air velocity monitoring system alerts the operator upon unacceptable values.

M. Built-in Blower: All models include an internal blower. The powder coated metal fan filter unit withstands tough environmental conditions and is located downstream of the filters, which protects the internal components from chemical damage. The addition of an optional remote blower and additional ductwork allows the cabinet to be connected to an existing facility exhaust system.

N. Internal Manual Speed Controller: Authorized personnel may set the centrifugal fan motor speed as desired.

O. Stand: Optional mobile cart with locking casters.

P. Work Surface: The epoxy resin worktop has excellent chemical resistance and spill retention. An optional stainless steel worktop is available; see Accessories.

Q. Filter Door Key: Filter access keys prevent unauthorized removal or accidental exposure to dirty filters.

R. Construction: (Optional) All polypropylene construction is available if desired; see Accessories.

Purair P5-24-XT (NANO), shown with optional mobile cart.

THE AIR SCIENCE PERFORMANCE ADVANTAGE

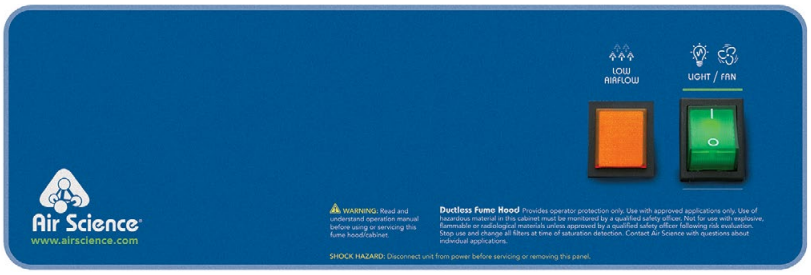
Each Air Science NANO hood includes features expressed through sound design and certified quality construction. Options and accessories add functional performance to meet specific applications:

Professional Quality. Air Science hoods comply with current technical and safety regulations.

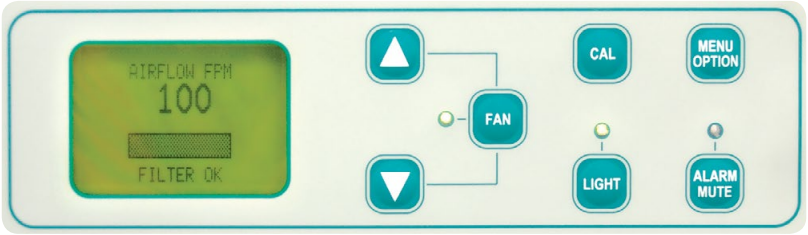
Optional ULPA Filtration. An ULPA filter can be added to better contain nanomaterial contaminants. The optional SafeSwitch™ bag-in/bag-out filter replacement system minimizes exposure during change-out to increase operator safety.

Industrial Components. The cabinet frame and work surfaces are durable and chemically resistant.

Reliability. Internal systems are isolated from fumes, extending product life.



Basic *control panel. Standard on Purair® NANO Models, Includes On/Off switch and low airflow alarm.*



The optional ***Monitair*** *microprocessor controller monitors and displays cabinet operating parameters, airflow, containment, and filter condition; emits audio and visual alerts if conditions become unsafe, all on a LCD display.*

multiplex™

AIR SCIENCE FILTRATION TECHNOLOGY

Multiplex Filtration in the NANO consists of a pre-filter, main filter, and an optional safety filter to create a complex architecture customized to each application. HEPA/ULPA filtration combined with activated carbon filtration maximize the number of particles captured through Brownian diffusion. The mechanical design enhances safety, convenience and overall value.

- The electrostatic pre-filter is accessible from within the cabinet.
- A filter clamping mechanism allows for the filter to be easily installed and ensures an even seal at the filter peripheral face at all times to prevent bypass leakage.
- The optional SafeSwitch™ Filter Shutter System ensures safer filter replacement by isolating contaminants from the operator during filter changes.
- The filter chamber prevents contaminated air from contacting internal cabinet mechanisms.
- The main filter number and installation date are displayed in a front-access window.
- The Multiplex option permits one or more filtration options to be combined to meet a wider range of multiple-use applications.

Multiplexing permits configuration for the capture of acids, bases and NANO particulates when paired with HEPA and ULPA filters.

- The Air Science carbon filter is a self-contained assembly sized to fit the specific product model number, and configured to optimize airflow across 100% of the filter surface area for maximum efficiency, prolonged filter life, optimal diffusion and saturation capacity, and user safety.

Air Science is the single source supplier for all pre-filters and carbon filters used in its products, plus those of many other manufacturers.

safe SWITCH™

BAG-IN/BAG-OUT FILTER REPLACEMENT

The optional Air Science SafeSwitch bag-in/bagout filter replacement system minimizes exposure to filter contaminants when removing used carbon or HEPA filters for insertion of new filters.

When replacement is required a draw cord manually activates an internal louver set to close the filter face for easy bag-out recovery. See Options.

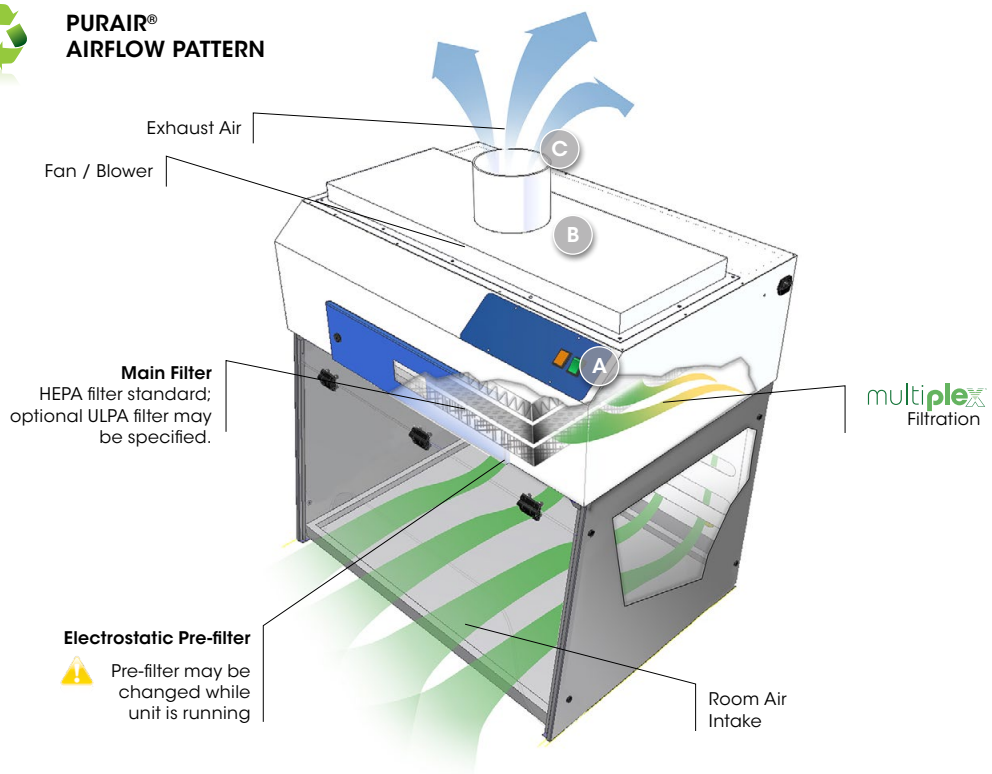
PURAIR NANO FEATURES & BENEFITS

Purair® NANO hoods are available in 3 standard sizes.

- High capacity air handling system delivers face velocity of 100 FPM.
- HEPA/ULPA filtration combined with an optional carbon safety filter for vapors.
- A low airflow alarm warns of insufficient face velocity.
- The Air Science filter assembly is easy to access, easy to change, and safe.
- Filters located upstream of the blower to protect against chemical damage.
- A unique filter clamping design eliminates bypass leakage outside the cabinet.
- Standard 6" removable external exhaust port to attach to external ducting.

Air Science fume hoods use energy-efficient ebmpapst™ brand centrifugal blowers for long life, and dependable performance.

PURAIR® AIRFLOW PATTERN



Purair P5-36-XT (NANO), shown with Multiplex Filtration System.

The Purair NANO Series ductless nanoparticle enclosure maintains a constant face velocity of 100 FPM in compliance with USA and international standards for safety and performance. Contaminated air is pulled through the Multiplex filtration system and clean air is returned to the room.

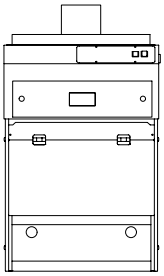
A. The main filter is easy to replace, no tools required. The filter clamps tightly against the filter gasket to prevent filter bypass and maintain filter integrity. The optional SafeSwitch™ HEPA Filter Shutter system also ensures that operators are safely separated from trapped contaminants during filter changes.

B. Exhaust is thoroughly scrubbed of nanomaterials produced from actions within the hood.

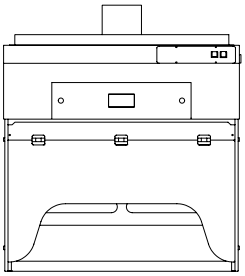
C. Choose from HEPA or ULPA main filter in combination with activated carbon safety filter. If HEPA/ULPA is chosen the cabinet can be used without connection to an outside exhaust. Exhaust air is recirculated back into the room or routed to in-house ductwork using the external exhaust port attachment.

MULTIPLEX FILTRATION SYSTEM, SUMMARY

	Filter Type	Filter Function
Standard Filters		
Pre-Filter	Electrostatic	Protects the main filter from aerosols, mists, dust and particulates. Pre-filter efficiency is typically 95.5% or greater down to 0.5 microns.
Main Filter	HEPA (ULPA optional)	A self-contained HEPA filter physically captures larger than 0.3 micron particulates. An ULPA filter may be specified to capture particulates larger than 0.12 microns. Specify when ordering.
Safety Filters (Optional, select only one)		
Safety Filter (HEPA/ULPA)	HEPA (ULPA optional)	The safety filter can be a self-contained HEPA filter which physically captures larger than 0.3 micron particulates. An ULPA filter may be specified to capture particulates larger than 0.12 microns. Specify when ordering. When chosen, the HEPA/ULPA safety filter permits the cabinet exhaust to be vented to the room without external ducting.
Safety Filter (Carbon)	Activated Carbon	FILTCO™ sourced, the single carbon filter contains activated carbon granules chemically formulated to capture one or more specific vapors or family of vapors.



P5-24-XT (NANO)



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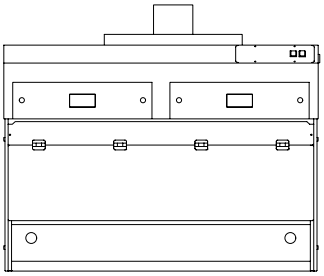
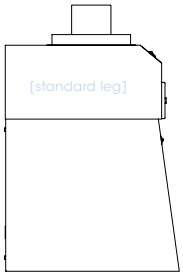


P5-48-XT (NANO)



Side View

MODEL	DIMENSIONS			WEIGHT (lbs/Kg)	
	Internal Height	External (W x D x H)	Shipping (W x D x H)	Net	Ship
Standard Models					
P5-24-XT (NANO)	23.6" 600 mm	24" x 27" x 35" 610 x 676 x 889 mm	40" x 40" x 40" 1016 x 1016 x 1016 mm	72 / 33	129 / 59
P5-36-XT (NANO)	23.6" 600 mm	36" x 27" x 35" 914 x 676 x 889 mm	40" x 40" x 40" 1016 x 1016 x 1016 mm	99 / 45	157 / 71
P5-48-XT (NANO)	23.6" 600 mm	48" x 27" x 35" 1219 x 676 x 889 mm	45" x 55" x 40" 1143 x 1397 x 1016 mm	138 / 63	195 / 88

PRODUCT SPECIFICATIONS

Purair Model	P5-24-XT (NANO)	P5-36-XT (NANO)	P5-48-XT (NANO)
Airflow CFM	135.9	206	281.25
Face Velocity FPM	100	100	100
Noise, dBA, 1 meter	< 50	< 50	< 53
Lighting	<··· Compact fluorescent lamp. ···>		
Construction	<··· Stainless steel frame and head unit. Clear back panel. ···>		
Blower	<··· ebmpapst™ centrifugal fan. ···>		
Electrical	<··· 120V, 60Hz or 220V, 50Hz voltages available. Specify when ordering. Other voltage options available. ···>		
Electrical Switches	<··· Main On/Off ···>		
Monitoring	<··· Low airflow alarm, standard. ···>		

Filter Specifications

Pre-Filter	Electrostatic, 1 lb / .45 kg (nominal)		
Main	HEPA (ULPA optional)	HEPA (ULPA optional)	(2) HEPA (ULPA optional)
Safety (optional)*	HEPA (ULPA optional) or Activated Carbon	HEPA (ULPA optional) or Activated Carbon	(2) HEPA (ULPA optional) or (2) Activated Carbon

** Optional. Select only one. Choose from HEPA (ULPA optional) or activated carbon.*
If HEPA/ULPA is chosen the cabinet can be used without connection to an outside exhaust.

Specifications are subject to change without notice.

OPTIONS & ACCESSORIES

Purair Model		P5-24-XT (NANO)	P5-36-XT (NANO)	P5-48-XT (NANO)
SafeSwitch™ Bag-In/Bag-Out Filter Replacement*	Minimizes exposure to filter contaminants when removing used carbon or HEPA filters for insertion of new filters. When replacement is required a draw cord manually activates an internal louver set to close the filter face for easy bag-out recovery.	ASTS-030-SS	ASTS-030-SS	ASTS-030-SS
Monitair Control Panel*	Microprocessor controller monitors cabinet operating parameters, airflow, containment, and filter condition; emits audio and visual alerts if conditions become unsafe.	MON-P	MON-P	MON-P
Stainless Steel Work Surface	Stainless steel work surface for easy cleaning.	SS TRAY-P5-24	SS TRAY-P5-36	SS TRAY-P5-48
Dwyer Air Flow Meter	Continuous display of face velocity.	DWYER	DWYER	DWYER
Base Stand, Mobile, with Casters	Provides a lower storage shelf; accommodates wheelchair access. Locking casters fix the hood in place.	P5-CART	P5-36-CART	P20-CART
Base Cabinet, Fixed	Provides storage space below.	P5-ENCB	P5-36-ENCB	P20-ENCB
ADA Compliance*	Provides wheelchair access and lowered remote controls.	<··· All Purair NANO models are available in ADA compliant configurations. Contact Air Science for ordering information. ···>		
Polypropylene Construction*	Cabinets are available in all polypropylene construction. Contact Air Science for information.	P5-24-XT (NANO)-PP	P5-36-XT (NANO)-PP	P5-48-XT (NANO)-PP
Duplex Electrical Outlet*	Two NEMA-1420R receptacles with ground fault interrupter. 110V service standard; international fixtures available.	AS-GFI	AS-GFI	AS-GFI
Stainless Steel Hanging Rod*	Hanging rod spans the width of the cabinet.	HANGR-NANO-24	HANGR-NANO-36	HANGR-NANO-48

** Factory installed; specify when ordering.*

Legacy Lifetime Warranty Protection

This product is protected by the Air Science® Legacy Lifetime Warranty™ which starts on the date of shipment from our factory. This limited warranty is the result of thousands of successful Air Science production applications in pharmaceutical, laboratory, forensic, industrial and educational applications. This warranty covers defects in materials and workmanship. Our liability under the Legacy Lifetime Warranty is, at our option, to repair or replace any defective parts of this equipment if you document that these parts were defective at the time we sold the product to you. Normal conditions apply.

For details visit the Service section of our website at www.airscience.com.

STANDARDS & COMPLIANCE

Quality Management Systems	ISO 9001
Chemical Fume Containment	ANSI/ASHRAE 110 1995 SAFEBRIDGE Performance Verification (VE)
Carbon Filter Efficiency	BS 7989-2001 AFNOR NFX 15-211
Biological Safety Filter Efficiency HEPA and ULPA	IEST-RP-CC-0034.2 IEST-RP-CC007.1 IEST-RP-CC001-4 EN 1822
Electrical Safety	UL-C-61010-1 CE Mark ROHS Exempt under EEE Category 9
Product Design	ANSI Z 9.5-2003 ANSI Z 9.7-1998
OSHA, Occupational Safety and Health Administration	OSHA Standard -29 CRF, Safety and Health Regulations for General Industry, 1910.1450: Occupational exposure to hazardous chemicals in laboratories. Part B, definition, laboratory type hood. All Air Science products meet this definition.
Environment	ISO 14001 Energy Star Partner

Air Science®

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ENERGY STAR PARTNER GSA Schedule Contract GS-07F5832P COTECNA CERTIFIED ISO 9001:2008 ISO 14001:2004 COMPANY Certificate No CQR-1582 A / B

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