



DUROCLEAN™

Stationary and Retracting Cleanrooms
1,000 CFM to 200,000 CFM



Duroair Technologies USA Inc.
129 Elm Steet, Unit B
East Aurora, NY 14502 USA

Duroair Technologies Inc.
5850 Don Murie Street, Unit D
Niagara Falls, ON Canada L2G 0B3

Contact Information
info@duroair.com
1-888-387-0911
1-905-356-8585

duroair.com

Product Data Sheet

Applications

Mechanical assembly, 3-D printing, electrical winding, aerospace assembly and lay up or any area requiring a sterile environment.

DuroClean™ Overview

Duroair's retractable clean rooms create clean air environments wherever they are needed. Combined with our DuroRoom™ retractable enclosure the DuroClean™ engineered exhaust system becomes one flexible, cost-effective solution for on-demand clean rooms and isolation rooms.

Duroair modular clean rooms can be placed anywhere in a manufacturing facility without having to install supplementary ductwork — or pay for ongoing air make-up costs. Our portable, retractable enclosures with non-vented air filtration can be engineered for large or small self-contained work environments, wherever and whenever needed.

Whether isolating a manufacturing process from the larger work environment (negative pressure) or protecting a process from contamination (positive pressure), our DuroRoom™ and engineered filtration systems help guarantee worker safety from toxic dust and fumes, while reducing operating expenses and increasing productivity.

Duroair's custom clean room design provides:

- Increased workflow efficiency for stop-and-start R&D processes
- Reduced material handling by not having to transport large workpieces to a dedicated clean air space
- Eliminated need for expensive equipment and installation for air make-up
- Laminar or turbulent airflow as required
- Unsurpassed control of isolated work environments, including pressure (positive or negative), humidity, and temperature air flow patterns, and harmful dust particulates and gaseous contaminants

Design Configurations

- HEPA Single Pass Design: Heating/Cooling and dehumidification can be added to the system.
- HEPA Recirculating Design: Heating/Cooling and dehumidification can be added to the system.
- HEPA Negative Pressure: Negative pressure/ Environmental isolation rooms to protect the external environment from processes generated in the enclosure. Heating/Cooling and dehumidification can be added to the system
- HEPA Positive Pressure: Positive pressure cleanrooms to protect your process from external contaminants. Heating/Cooling and dehumidification can be added to the system
- Containment: Heating/Cooling and dehumidification can be added to the system and air is recirculated for filtration or exhausted area within the building

Filters

Duroair custom designs its cleanrooms according to each customer's requirements. Below is a list of filters used depending upon design requirements.

- Prefilter - medium efficiency (35%) particulate filter. The filter collects atmospheric dust and larger particles, thereby preventing clogging and extending the life of the later stage filters.
- Gas phase media filter - the air passes through a filter which may contain Purafil media, activated carbon media, or AQF media for removal of gaseous contaminants.
- High efficiency filter - the air passes through a 90-98% efficient rigid type filter in either box, mini- pleat V-bank or pocket style designed to maximize filter media and minimize pressure drop to reduce energy usage.
- HEPA filter - High Efficiency Particulate Air filter are used in a wide variety of applications in which maintaining a sterile environment is critical. HEPA's are available in 99.97 and 99.99% efficiencies, in standard and high capacity.
- Options for UV light.

Air Flow

- Laminar, or unidirectional, air flow systems.
- Turbulent, or non-unidirectional, air flow systems

Product Data Sheet

Standard Cleanroom Classes

Cleanliness Level	ISO Class Number	ACH HOUR*	Maximum concentration limits (particles/m ³ of air) for particles equal to and larger than the considered sizes shown							Particles/ft ³ of air	FED STD 209E equivalent
			≥0.1 μm	≥0.2 μm	≥0.3 μm	≥0.5 μm	≥1 μm	≥5 μm	≥0.5 μm		
Extremely Clean Clean	ISO 1		10	2							
	ISO 2		100	24	10	4					
	ISO 3		1,000	237	102	35	8		1	Class 1	
	ISO 4		10,000	2,370	1,020	352	83		10	Class 10	
	ISO 5	150-250+	100,000	23,700	10,200	3,520	832	29	100	Class 100	
	Duroair Soft-walled Cleanroom Range	ISO 6	60-150	1,000,000	237,000	102,000	35,200	8,320	293	1,000	Class 1,000
		ISO 7	30-50				352,000	83,200	2,930	10,000	Class 10,000
		ISO 8	10-25				3,520,000	832,000	29,300	100,000	Class 100,000
		ISO 9	2-4				35,200,000	8,320,000	293,000		Room air

***Air changes per hour (ACH)**

In order to reach a desired cleanliness level inside the cleanroom, the system combines air changes per hour (ACH) with filtered air circulating into the cleanroom many times per hour. The required ACH is determined by the ISO class to be met, please see chart below. A conventional office building or home system usually makes two to four air changes per hour but a cleanroom can range from 10 to 250 or more depending upon the requirements.

DuroClean™ System

CFM	TEMPERATURE and HUMIDITY CONTROL	PRESSURE			AIRFLOW		UV LIGHTS	VFD	MAGNEHELIC GAUGE	CONTROL PANELS WITH OPTIONAL HMI INTERFACE	UP TO 4 STAGE FILTRATION WITH HEPA	LIGHTING		
		+	-	N	Laminar	Turbulent						C1 D1	C1 D2	STD LED
1,000 CFM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2,000 CFM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4,000 CFM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
8,000 CFM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
12,000 CFM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
20,000 CFM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
30,000 CFM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
50,000 CFM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
75,000 CFM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
90,000 CFM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Fans

Fans are designed using a reverse incline fan wheels with inlet cones. Non sparking construction. Fan sizes from 18" to 35" with 5hp to 25hp motors dependent on airflow requirements. Airflow designed at 3.5" static pressure.

Variable Frequency Drive

A VFD is used to give the customer complete control of airflow and doubles as a soft starter to eliminate the need for a motor starter.

Control Panel

The Control Panel is a lockable fused disconnect and is a C/ UL/US listed panel, with an on/off, speed dial control. Customer is required to supply building power. The control panel is prewired and contains an air solenoid for production air. Options include a customized HMI interface.

UV lights in Cleanrooms

In addition to air filters, cleanrooms can also use ultraviolet light to disinfect the air. Duroair uses UV lights in its DuroPure™ systems and designs many custom applications.

Lighting

Class 1, Div 2 lights, LED lights and trough lights available depending upon requirements.

Fire Suppression

Wet or dry is available depending upon requirements.

