AIR CONTROL, INC.

DESICCATOR CABINETS (DRY BOXES)

makes air clean

Hydrovoid

www.hydrovoid.com

Hydrovoid

Dessicator Cabinets

Air Control, Inc. clean storage dessicator cabinets or dry boxes and custom environments are designed for the protection and storage of moisture, particulate, temperature, and light sensitive semiconductor parts, microelectronic devices, biological mixtures and sensitive processes. By introducing and maintaining an inert gas (nitrogen) to a near-tight, controlled purged environment, stored parts are not subjected to damage caused by oxidation or particulate contamination.

Dessicator Cabinet Specifications

DESIGN:

1. All desiccator cabinets have a "flush surface" cabinet design and are built in accordance with the standard of construction for the laboratory and cleanroom industries. Dessicator cabinets are air tight, with uniquely fabricated solvent-fused seams, which permit easy cleaning with aqueous solutions. Controlled purge through sealed compartments is controlled via gas regulator and flowmeter.

2. Gasketed chamber doors overlap cabinet chamber opening perimeter to ensure tight and controlled purged seal when door closed.

3. All storage cabinets have at least one controlled purged chamber, but can have multiple compartments added in array, if specified. With multi-chamber units, each chamber may have independent environmental controls, or all multi chambers may be "zone" controlled in arrays, utilizing plenums and perforated inner walls for even gas flow.

4. All components, including hardware, are stainless steel, polypropylene or other material.

5. Cell-cast, rigid thermoplastic, clear acrylic construction is standard. Many alternative materials are available depending on application. PVC, Lexan, UV filtering amber acrylic, static-dissipative material are all alternative options depending on specific parts stored and environment required.

6. Desiccator cabinets may be tabletop placed, freestanding with stainless steel or plastic support stands, or portable on frames with casters.

7. Standard inert gas nipple(s), gas flow meters, and gas regulators accompany all desiccator cabinets.

MATERIALS DESCRIPTION:

1. All materials are of the highest quality whether they be raw plastic, sheet, hardware, or in completed product form.

2. All acrylic raw sheet materials are inspected prior to fabrication and certified to be free of any visual or structural defect.

MATERIAL GAUGES:

1. Acrylic material is available in ¼", 3/8", and ½" thicknesses. Individual replacement parts including doors and shelves are all available in these thicknesses.

CABINET CONSTRUCTION:

1. Cabinets: Standard construction ¼" optically clear acrylic, acid-resistant, cell-cast acrylic. The cabinet floor is typically built with 1/4" white (opaque) acrylic material. Unique joint profile creation with tight, solvent-fused seams, permit easy cleaning with aqueous solutions. Gas nipples, flow meters, and regulators are mounted on the outside of the cabinet where specified.

2. Doors: Doors are solid 3/8" thick optically clear, thermally polished acrylic, with polished edges. Optional stainless steel framed doors are solid 1/4" polished acrylic. Hinges are stainless steel. Door perimeter contains closed-cell neoprene gasketing for tight seal to cabinet. Compression latches tighten door to cabinet in air-tight fashion.

3. Shelves: Shelves are made from solid 1/4" or 3/8" solid acrylic. Shelves are supported by CNC routed notched groove system mounted on compartment sidewalls. Shelves may be specified as adjustable, utilizing this multi-position, non-metal shelf support system. Individual shelves may also be specified as removable and/or perforated.

In addition to the Hydrovoid line of standard controlled environment chambers and desiccator cabinets, Air Control fabricates custom units designed to meet the customer's specific requirements. Air Control builds in Acrylic, PVC, Lexan, Polypropylene and Stainless Steel. Units may be designed for bench top placement, or with support stands. Various critical environments may be created and maintained within the unit.

4. Fabricated Accessories: All accessories required for specific installations are fabricated and finished to the same material quality standards as the base units they are made to compliment.

5. Options: a.) Units may include electrical services, laminar airflow with recirculation, humidity monitors, and chart recorders for archival data logging of internal environmental conditions. An array of alternative materials is available to meet specific environmental conditions criteria including static dissipative plastics and UV filtering materials.

ACRYLIC STANDARDS AND SPECIFICATIONS

ASTM D-4101 Group1 Class 1 Grade II, FDA Regulation Title 21 DFR 177.1520 (C1.1); Federal Specification LP-394B Type 1 (GP) Type III Grade IIIA Class III; USDA Approval for direct contact with meat and poultry products (Natural & White); Military Standard D/N/A; UV Radiation Exposure 500 hours no visible change; California Proposition 65 – Safe Drinking Water and Toxic Enforcement Act – Passes.

Hydrovoid Standard Desiccator Cabinets (Dry Boxes)

Desiccator Cabinets for storage of humidity sensitive parts.
All dimensions are nominal.

Part Number	Description	Length	Width	Height	Weight	Lead Time	Typical Unit
4311-0	DESICCATOR CLR ACRYLIC, 1 DR	12	12	12	15	20	
4321-1	DESICCATOR CLR ACRYLIC, 2 DR	16	18	18	30	20	
4321-2	DESICCATOR CLR ACRYLIC, 2 DR	18	18	24	45	20	
4331-1	DESICCATOR CLR ACRYLIC, 3 DR	16	18	27	48	20	
4331-2	DESICCATOR CLR ACRYLIC, 3 DR	18	24	36	97	20	
4341-1	DESICCATOR CLR ACRYLIC, 4 DR	18	24	48	130	20	
4341-2	DESICCATOR CLR ACRYLIC, 4 DR	24	36	48	260	20	
4351-1	DESICCATOR CLR ACRYLIC, 5 DR	24	24	60	200	20	
4351-2	DESICCATOR CLR ACRYLIC, 5 DR	24	36	60	324	20	
4361-1	DESICCATOR CLR ACRYLIC, 6 DR	18	36	36	145	20	
4361-2	DESICCATOR CLR ACRYLIC, 6 DR	24	46	36	248	20	
4381-1	DESICCATOR CLR ACRYLIC, 8 DR	24	36	48	260	20	
4381-2	DESICCATOR CLR ACRYLIC, 8 DR	24	46	48	331	20	
43101-1	DESICCATOR CLR ACRYLIC, 10 DR	24	36	60	325	20	
4411-0	DESICCATOR AMB ACRYLIC, 1 DR	12	12	12	15	20	
4421-1	DESICCATOR AMB ACRYLIC, 2 DR	16	18	18	30	20	
4421-2	DESICCATOR AMB ACRYLIC, 2 DR	18	18	24	45	20	
4431-1	DESICCATOR AMB ACRYLIC, 3 DR	16	18	27	48	20	
4431-2	DESICCATOR AMB ACRYLIC, 3 DR	18	24	36	97	20	
4441-1	DESICCATOR AMB ACRYLIC, 4 DR	18	24	48	130	20	
4441-2	DESICCATOR AMB ACRYLIC, 4 DR	24	36	48	260	20	
4451-1	DESICCATOR AMB ACRYLIC, 5 DR	24	24	60	200	20	
4451-2	DESICCATOR AMB ACRYLIC, 5 DR	24	36	60	324	20	
4461-1	DESICCATOR AMB ACRYLIC, 6 DR	18	36	36	145	20	
4461-2	DESICCATOR AMB ACRYLIC, 6 DR	24	46	36	248	20	
4481-1	DESICCATOR AMB ACRYLIC, 8 DR	24	36	48	260	20	
4481-2	DESICCATOR AMB ACRYLIC, 8 DR	24	46	48	331	20	
44101-1	DESICCATOR AMB ACRYLIC, 10 DR	24	36	60	325	20	

Hydrovoid Standard Desiccator Cabinets (Dry Boxes)

Desiccator Cabinets for storage of humidity sensitive parts.

Part Number	Description	Length	Width	Height	Weight	Lead Time	Typical Unit
4511-0	DESICCATOR ESD-PVC,1 DR	12	12	12	15	30	
4521-1	DESICCATOR ESD-PVC, 2 DR	16	18	18	30	30	
4521-2	DESICCATOR ESD-PVC, 2 DR	18	18	24	45	30	
4531-1	DESICCATOR ESD-PVC, 3 DR	16	18	27	48	30	
4531-2	DESICCATOR ESD-PVC, 3 DR	18	24	36	97	30	
4541-1	DESICCATOR ESD-PVC, 4 DR	18	24	48	130	30	
4541-2	DESICCATOR ESD-PVC, 4 DR	24	36	48	260	30	
4551-1	DESICCATOR ESD-PVC, 5 DR	24	24	60	200	30	
4551-2	DESICCATOR ESD-PVC, 5 DR	24	36	60	324	30	
4561-1	DESICCATOR ESD-PVC, 6 DR	18	36	36	145	30	
4561-2	DESICCATOR ESD-PVC, 6 DR	24	46	36	248	30	
4581-1	DESICCATOR ESD-PVC, 8 DR	24	36	48	260	30	
4581-2	DESICCATOR ESD-PVC, 8 DR	24	46	48	331	30	
45101-1	DESICCATOR ESD-PVC, 10 DR	24	36	60	325	30	
4611-0	DESICCATOR ESD-ACRYLIC, 1 DR	12	12	12	15	30	
4621-1	DESICCATOR ESD-ACRYLIC, 1 DR	16	18	18	30	30	
4621-2	DESICCATOR ESD-ACRYLIC, 2 DR	18	18	24	45	30	
4631-1	DESICCATOR ESD-ACRYLIC, 3 DR	16	18	27	48	30	
4631-2	DESICCATOR ESD-ACRYLIC, 3 DR	18	24	36	97	30	
4641-1	DESICCATOR ESD-ACRYLIC, 4 DR	18	24	48	130	30	
4641-2	DESICCATOR ESD-ACRYLIC, 4 DR	24	36	48	260	30	
4651-1	DESICCATOR ESD-ACRYLIC, 5 DR	24	24	60	200	30	
4651-2	DESICCATOR ESD-ACRYLIC, 5 DR	24	36	60	324	30	
4661-1	DESICCATOR ESD-ACRYLIC, 6 DR	18	36	36	145	30	
4661-2	DESICCATOR ESD-ACRYLIC, 6 DR	24	46	36	248	30	
4681-1	DESICCATOR ESD-ACRYLIC, 8 DR	24	36	48	260	30	
4681-2	DESICCATOR ESD-ACRYLIC,8 DR	24	46	48	331	30	
46101-1	DESICCATOR ESD-ACRYLIC, 10 DR	24	36	60	325	30	
5330	5330 ACR. GLOVEBOX W./AIRLOCK	24	49	19.75	40	40	

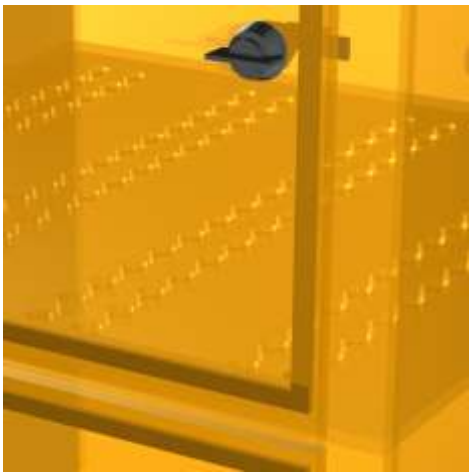
Hydrovoid Dessicator Options

- Gas nipples for the introduction of inert gasses or other controlled atmospheres.

Air Control offers a wide variety of options to fulfill any conceivable need for our desiccator cabinets. With about 50 years experience designing and fabricating quality equipment, our designers stand ready to assist you with your requirements. Accommodating special needs can be easily and efficiently accomplished.

A few common options are shown on this page.

Contact our technical sales representatives for more options, details, and pricing.

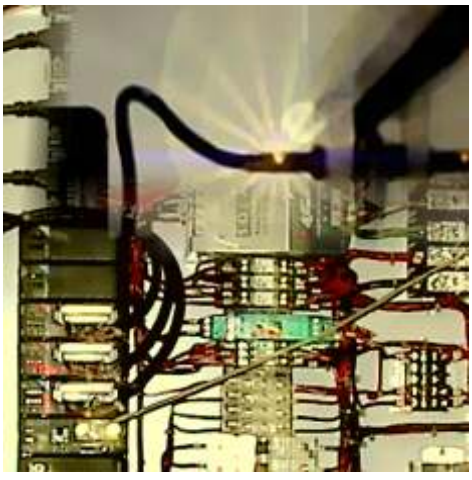


- Perforated and/or removable shelves.

- Flow meter for controlling gas flow to cabinet

- HEPA filtered air in and/or out.

- Stainless Steel Doors



- Sophisticated electronics with sensors to measure, monitor, and control the cabinet environment.

- Castors or dollies for large cabinet mobility with or without stands.

- Lighting and electrical receptacles.

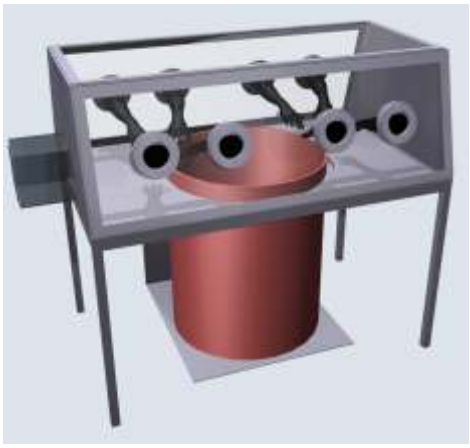
Hydrovoid

Custom Unit Design

■ Above: Custom recirculating laminar flow cabinet with humidity control

Air Control engineers will design clean cabinets and chambers to meet your specific requirements. The same detailed construction is maintained on custom units as on our standard product line. Cabinets can be designed for bench top placement or with support stands and can be fabricated from acrylic, polypropylene, PVC, enameled steel, stainless steel, and Lexan.

Contact our technical sales representatives for help in defining your needs.



■ Above: Custom glove box

■ Right: Custom containment chamber designed to fit bio-reactor

■ Left: Room full of ventilated enclosures

■ Below: Custom containment chamber

■ Above: Custom desiccator cart

■ Right: 3-D modeling can be used to prove concepts before

Physical Properties of Acrylic Sheets

Property (a)		ASTM Method	Typical Value (2.36" Thickness) (b)	
Mechanical				
	Specific Gravity	D 792	1.19	
	Tensile Strength	D638	10,000 psi	(69 M Pa)
	Elongation, Rupture		4.2%	
	Module of Elasticity		400,000 psi	(2800 M Pa)
	Flexural Strength (Rupture)	D790	16,500 psi	(114) M Pa)
	Modulus of Elasticity			
	Comprehensive Strength (Yield)	D695	18,000 psi	(124 M Pa)
	Modulus of Elasticity		430,000 psi	(2960 M Pa)
	Sheer Strength	D732	9,000 Psi	(62 M Pa)
	Impact Strength	D256	0.4 ft. lbs./in. of notch	
	Izod Milled Notch		(21.6 J/m of notch	
	Rockwell Hardness	D785	M-94	
	Barcol Hardness	D 2583	49	
	Residual Shrinkage (c) (Internal Strain)	D 702	2%	
Optical (Clear Material)	Refractive Index	D 542	1.49	
	Light Transmission, Total	D 1003	92%	
	UV Transmission		0 at 320 nanometers	
	Haze		Less than 1%	
Thermal	Forming Temperature	—	340-380°F (170-190°C)	
	Deflection Temperature under load, 264 psi	D 648	210°F (99°C)	
	Vicat Softening Point	D 1525	239° (115°C)	
	Maximum Recommended Continuous Service Temperature	—	180°F (82°C)	
	Coefficient of Linear Thermal Expansion	D 696	0.000040 in/in-°F (0.000072 m/m-°C)	
	Coeficient of Thermal Conductivity (K-Factor)	Cenco-Fitch	1.3 BTU/(Hr) (Sq. Ft.) (°F/in. (0.19 w/m-K)	
	Flammability (Burning Rate 3mm thickness	D 635	1.2 in/min (30.5 mm/min)	
	Self-Ignition Temperature	D 1929	910°F (490LC)	
	Specific Heat @ 77°F	—	0.35 BTU/(lb.) (°F)	
	Smoke Density Rating (3mm thickness)	D2843	11.4%	
Electrical	Dielctric Strenght Short Time (0.1 25"-thickness	D149	430 volts/mil (17KV/mm	
	Dielectric Constant	D 150		
	60 Hertz		3.5	
	1,000 Hertz		3.2	
	1,000,000 Hertz		2.7	
	Dissipation Factor	D 150		
	60 Hertz		0.06	
	1,000 Hertz		0.04	
	1,000,000 Hertz		0.02	
	Volume Resistivity	D 257	1.6×10^{16} Ohm-cm	
	Surface Resistivity	D 257	1.9×10^{15} Ohm-cm	
Water Absorption	24 hrs @ 73°F	D 570	0.2%	
	Weight Gain during immersion		0.2%	
	Soluble Matter Lost		0.0%	
	Water Absorbed		0.2%	
	Dimensional Change during immrersion		0.2%	
Long Term Water Absorption	Weight Gain during immersion	D 570		
	7 days		0.5%	
	14 days		0.6%	
	21 days		0.8%	
	35 days		1.0%	
	48 days		1.1%	
Odor		—	None	
Taste		—	None	

Notes: (a) Typical values; should not be used for specification purposes.
(b) Values shown are for 6mm thickness unless noted otherwise. Some values will change with thickness.
(c) Difference in length and width, as measured at room temperature, before and after heating above 300°F.
(d) It is recommended that temperatures not exceed 180°F for continuous service, or 200° for short, intermittent use.

Chemical Resistance of Acrylic Sheets

The table below gives an indication of the chemical resistance of clear ACRYLITE GP sheet. The code used to describe chemical resistance is as follows: **R = Resistant**

ACRYLITE GP sheet withstands this substance for long periods and at temperatures up to 120°F (49°C). **LR = Limited Resistance** ACRYLITE GP sheet only resists the action of this substance for short periods at room temperatures. The resistance for a particular application must be determined.

N= Not Resistant

ACRYLITE GP sheet is not resistant to this substance. It is either swelled, attacked, dissolved or damaged in some manner.

Plastic materials can be attacked by chemicals in several ways. The methods of fabrication and/or conditions of exposure of ACRYLITE GP sheet, as well as the manner in which the chemicals are applied, can influence the final results even for "R" coded chemicals. Some of these factors are listed below. **Fabrication**-Stress generated while sawing, sanding, machining, drilling, polishing, and/or forming. **Exposure**-Length of exposure, stresses induced during the life of the product due to various loads, changes in temperatures, etc.

Application of Chemicals-by contact, rubbing, wiping, spraying, etc.

The table therefore should be used only as a general guide and, in case of doubt, supplemented by tests made under actual working conditions.

Chemical	Code	Chemical	Code
Acetic-Acid (5%)	R	Hydrogen Peroxide (up to 40%)	R
Acetic Acid (Glacial)	N	Hydrogen Peroxide (over 40%)	N
Acetone	N	Isopropyl Alcohol (up to 50%)	LR
Ammonium Chloride (Saturated)	R	Keronsene	R
Ammonium Hydroxide (10%)	R	Lacquer Thinner	N
Ammonium Hydroxide (Conc.)	R	Methly Alcohol (up to 15%)	LR
Aniline	N	Methly Alcohol (100%)	N
Battery Acid	R	Methyl Ethyl Ketone (MEK)	N
Benzene	N	Methylene Chloride	N
Butyl Acetate	N	Mineral Oil	R
Calcium Chloride (Sat)	R	Naptha (VM&P)	R
Calcium Hypochlorite	R	Nitric Acid (up to 20%)	R
Carbon Tetrachloride	N	Nitric Acid (20%-70%)	LR
Chloroform	N	Nitric Acid (over 70%)	N
Chromic Acid	LR	Oleic Acid	R
CITRIC Acid (20%)	R	Olive Oil	R
Detergent Solution (Heavy Duty)	R	Phenois	N
Diesel Oil	R	Soap Solution (Ivory)	R
Dimethyl Formamide	N	Sodium Carbonate	R
Dioctyl Phthalate	N	Sodium Chloride	R
Ether	N	Sodium Hydroxided	R
Ethyl Acetate	N	Sodium Hypochlorite	R
Ethyl Alcohol (30%)	LR	Sulfuric Acid (up to 30%)	R
Ethyl Alcohol (95%)	N	Sulfuric Acid (Conc)	LR
Ethylene Dichloride	N	Toulene	N
Ethylene Glycol	R	Trichloroethlene	LR
Formaldehyde (40%)	R	Turpentine	LR
Gasoline (Regular, Leaded)	LR	Water	R
Glycerine	R	Xylene	N
Heptane	R		
Hexane (Commercial Grade)	R		
Hydrochloric Acid	R		
Hydrofluoric Acid	N		

Air Control, Inc.

SEFA MEMBER

Prices subject to change without notice.

ACH0507/1.5

makes air clean

AIR CONTROL, INC.

P.O. Box 1738
Henderson, NC 27536 USA
Voice: 252.492.2300
Fax: 252.492.9225