



The Air is

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AtmosAir Facts & Figures

AtmosAir.com

AtmosAir Real World Testing USA

Client	CO ₂ Before (PPM)	CO ₂ After (PPM)	PM10 Before (ug/m ³)	PM10 After (ug/m ³)	PM2.5 Before (ug/m ³)	PM2.5 After (ug/m ³)	TVOC Before (PPM)	TVOC After (PPM)	Laboratory Mold Testing	Indiv. VOC Element Testing	Ozone Before	Ozone After	Energy Project
US Department of Defense	614	576	24	7	19	5	n/a	n/a	✓ (-41%)	n/a	n/a	n/a	✓
California Public School	847.5	798.5	23.1	31.37	6.65	6.2	69.25	1.65	✓	n/a	0	0	✗
Arena - Los Angeles, CA	560	470	25	19	n/a	n/a	13	0	✗	Yes	0.015	0	✓
Global Banking Institution - New York, NY	991	1006	6	4	1	1	40	21	✗	n/a	0	0	✗
Florida-based Power Utility Company - Plantation, FL	1046	693	15	6	10	4	5	0	✗	n/a	0	0	✓
Largest Global Architecture Firm - Los Angeles, CA	639	609	6	2	5	3	25	8	✗	n/a	0.024	0	✗
Fairfield County Public Schools	1007	769	12	7	7	1	2	0	✓ (-95%)	n/a	0.001	0	✗
Global Hotel & Resort - New York, NY	491	477	7	6	5	4	10	0	✗	n/a	0	0	✓
Global Banking Institution 2 - New York, NY	485	689	4	2	3	2	8	1	✗	n/a	0	0	✗
Global Banking Institution 3 - New York, NY	726	736	7	8	4	1	150	2	✗	n/a	0.005	0.004	✗
Casino (100k Sq Ft Gaming Space) - Pittsburgh, PA	589	799	91	88	88	96	150	28	✗	n/a	0	0	✗
Vivarium - New York	3000	2995	13	14	1	1	150	116	✗	n/a	0	0	✓
Public Research University - Los Angeles, CA	1087	776	62	17	2	1	22	8	✗	n/a	0	0	✗
Private Research University - Los Angeles, CA	n/a	n/a	9	2	14	2	17	2	✗	n/a	0	0	✓
Medical Center - New York	1268	1074	12	11	10	5	116	61	n/a	n/a	0.01	0.01	✗
West Coast Real Estate Conglomerate	620	691	6	7	4	6	9	6	n/a	✓	0	0	✓
Arena - Nashville, TN	488	385	9	10	9	9	25	1	n/a	n/a	0.008	0	✗
Global Mass Media Company - New York, NY	804	829	5	2	6	2	150	20	n/a	n/a	0	0	✗
Big 4 Accounting Firm - Westlake, TX	508	514	9	7	7	6	150	53	n/a	n/a	0	0	✗
Global Banking Institution 4 - New Jersey	847	989	30	4	28	2	48	30	n/a	n/a	0	0	✗
American Multinational Hospitality Company - Chicago	475	503	4	5	4	4	150	10	n/a	n/a	0	0	✗
Minnesota Public School	904	580	34	12	11	3	6	3	n/a	n/a	0	0	✓
Major Casino - Hollywood, FL			101	55	97	50	119	24	n/a	n/a	0	0	
Office Tower - New York, NY	1182	1200	6	3	5	2	18	11	n/a	n/a	0	0	✓

Study Report – AtmosAir vs. Coronavirus



Test Report | Microchem Laboratory

Test Results at 30 minutes

Study Title

Virucidal Efficacy of a Test Substance For Use on Inanimate, Nonporous Surfaces

Product Identity

AtmosAir Matterhorn Series

Standardized Test Method

ASTM E1053

Maximum Ionization Rate

1,500 ions cm/3

Test Result

The presence of coronavirus was reduced by 99.92% within 30 minutes of exposure to AtmosAir's bi-polar ionization technology

		Test Results Replicate 1 30 minutes	Test Results Replicate 2 30 minutes	Test Results Replicate 3 30 minutes
Cell Control		0 0 0 0	0 0 0 0	0 0 0 0
Dilution	10⁻¹	0 0 0 +	0 0 0 +	0 0 0 0
	10⁻²	0 0 0 0	0 0 0 0	0 0 0 0
	10⁻³	0 0 0 0	0 0 0 0	0 0 0 0
	10⁻⁴	0 0 0 0	0 0 0 0	0 0 0 0
	10⁻⁵	0 0 0 0	0 0 0 0	0 0 0 0
TCID₅₀ per 0.1 ml		0.75 Log ₁₀	0.75 Log ₁₀	≤0.50 Log ₁₀
TCID₅₀ per Carrier		1.05 Log ₁₀	1.05 Log ₁₀	≤0.80 Log ₁₀
Average Log₁₀ Reduction		2.78 Log ₁₀		
Average Percent Reduction		99.92%		

Key: + = Virus recovered; 0 = Virus not recovered and/or no cytotoxicity observed;
T = Cytotoxicity observed; †Taking cytotoxicity and neutralization controls into account.

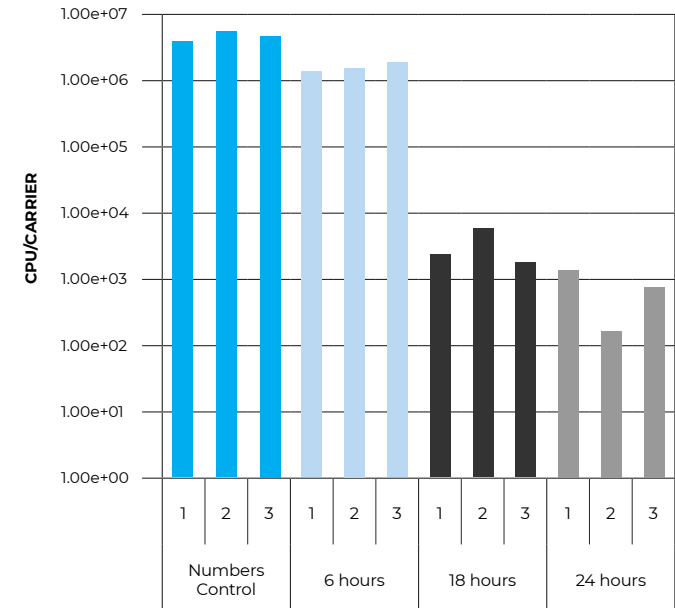
Study Report – AtmosAir vs. C. Diff

Test Report | Microchem Laboratory

The following graph and table are the calculated results for *C. difficile* 43598 (Endospores) when treated with AtmosAir in a closed chamber measuring 4'x4'.



Test device	Test Microorganism	Carrier Control/ Treatment	Replicate or Control Time Point	CFU/Carrier	Average CFU/Carrier	Percent Reduction Compared to Control at Contact Time	Log ₁₀ Reduction Compared to Control at Contact Time
Matterhorn	<i>C. difficile</i> 43598 (Endospores)	Numbers Control	6 hours	3.60E+06	n/a		
			18 hours	4.50E+06			
			24 hours	3.60E+06			
		6 hours	1	1.19E+06	1.53E+06	57.59%	0.37
			2	1.38E+06			
			3	2.01E+06			
		18 hours	1	2.50E+03	3.33E+03	99.93%	3.13
			2	5.20E+03			
			3	2.30E+03			
		24 hours	1	1.51E+03	8.17E+02	99.98%	3.64
			2	1.30E+02			
			3	8.10E+02			



The limit of detection for this assay is 1.00E+01 results below the limit of detection are reported as <1.00E+01. Maximum Ionization Rate: 1,500 ions/cm³

Test Result

The presence of *C. Diff* was reduced by 99.93% within 18 hours of exposure to AtmosAir's bi-polar ionization technology. Ionization rate of 1,500 ions/cm³ is indicative of an ionization rate achieved with the AtmosAir system operating in a standard office building, school, hospital.

Testing by Microchem Labs of AtmosAir vs. superbug *C. difficile*.

Ozone Testing

UL2998 and UL867 Verified Zero Ozone



VERIFIED
ZERO OZONE

Intertek does hereby certify that an independent assessment has been conducted on behalf of

ATMOSAIR

Certificate Number

104404620GRR-001

Certification Issued

18 September 2020

Initial Verification Date

18 September 2020

Certificate Valid Until

17 September 2021

Applicant Address

418 Meadow Street, Suite 204
Fairfield, CT 06824 USA

Product Category

Appliances & Electronics, Air Cleaners

Product Details

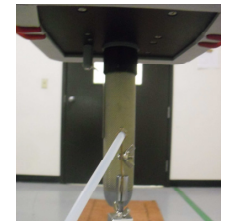
See Appendix

Conformance Criteria

Conforms to UL 2998 (3rd Edition, July 10, 2020) clause 6.2, emittance of ozone not exceeding a concentration of 0.005 ppm.

Issuing Office Name & Address

Intertek Testing Services NA, Inc.
4700 Broadmoor Ave SE, Suite 200
Kentwood, MI 49512 USA
Ph: +1-616-656-7401



AtmosAir vs. Airborne Staph, MRSA, MS2 Bacteriophage, E. Coli

Test Report | Antimicrobial Test Laboratories



Microorganism	Test Device	Initial Numbers Control (CFU/m ³)	Sampling Time Point	Recovery (CFU/m ³)		Percent Reduction vs. Normalized Number Control	Log Reduction vs. Normalized Number Control
				Normalized Numbers Control	Test Data		
S. saprophyticus ATCC 35552	Matterhorn	4.14E+08	15 Minutes	3.39E+07	2.31E+05	99.32%	2.17
			45 Minutes	4.48E+06	<2.27E+01	99.9995%	5.29

Note: The Limit of Detection (LOD) for this germ is 22.7 CFU/m³. Values below the LOD are represented as <2.27E+01 in the chart above and 0 in the graph below.

Microorganism	Test Device	Initial Numbers Control (CFU/m ³)	Sampling Time Point	Recovery (CFU/m ³)		Percent Reduction vs. Normalized Number Control	Log Reduction vs. Normalized Number Control
				Normalized Numbers Control	Test Data		
E. coli K12	Matterhorn	3.42E+07	15 Minutes	1.18E+06	<7.68E+02	>99.94%	3.19
			45 Minutes	1.61E+05	<2.27E+01	>99.986%	>3.85

Note: The Limit of Detections (LOD) for this germ are 768 CFU/m³ and 22.7 CFU/m³ for 15 and 45 minutes, respectively. Values below the LOD are represented as <7.68E+02 and <2.27E+01 in the chart above and 0 in the graph below.

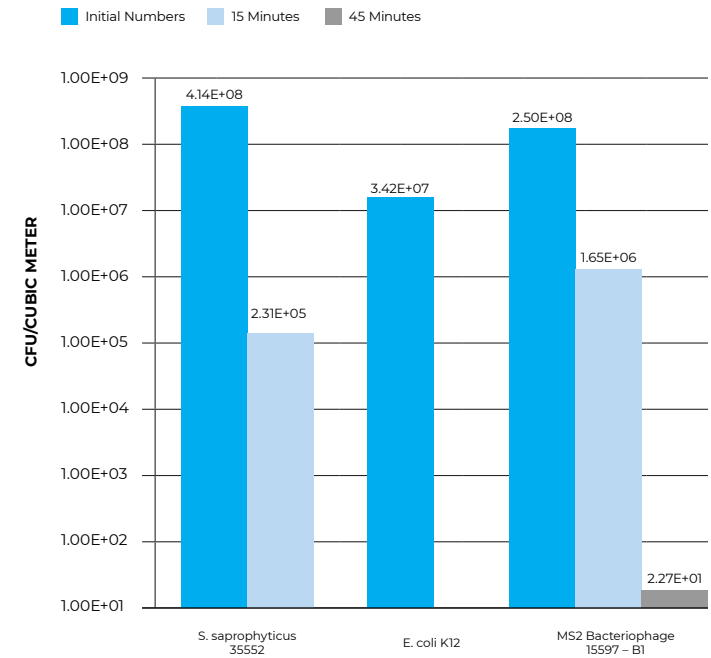
Microorganism	Test Device	Initial Numbers Control (CFU/m ³)	Sampling Time Point	Recovery (CFU/m ³)		Percent Reduction vs. Normalized Number Control	Log Reduction vs. Normalized Number Control
				Normalized Numbers Control	Test Data		
MS2 Bacteriophage ATCC 15597-B1	Matterhorn	2.50E+08	15 Minutes	8.84E+07	1.65E+06	98.13%	1.73
			45 Minutes	3.32E+07	2.27E+01	99.99993%	6.17

Note: The Limit of Detection (LOD) for this germ is 22.7 CFU/m³. Values below the LOD are represented as <2.27E+01 in the chart above and 0 in the graph right

Test Result

The presence of aerosolized Staph was reduced by 99.32% within 15 minutes. The presence of aerosolized E. Coli was reduced by 99.94% within 15 minutes. The presence of aerosolized MS2 Bacteriophage was reduced by 98.13% within 15 minutes.

Relative Performance of AtmosAir Matterhorn when Tested Against Bioaerosolized Microorganisms



The results of this study apply to the tested substances(s) only. Extrapolation of findings to related materials is the responsibility of the Sponsor.

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AtmosAir vs. VOCs - Syracuse University Lab Test

Full-Scale Chamber Testing of Air Cleaner Performance for the Removal of Volatile Organic Compounds

TVOC Testing - Third Party Chamber Testing of AtmosAir vs. VOCs with Syracuse University Center of Excellence Laboratory.

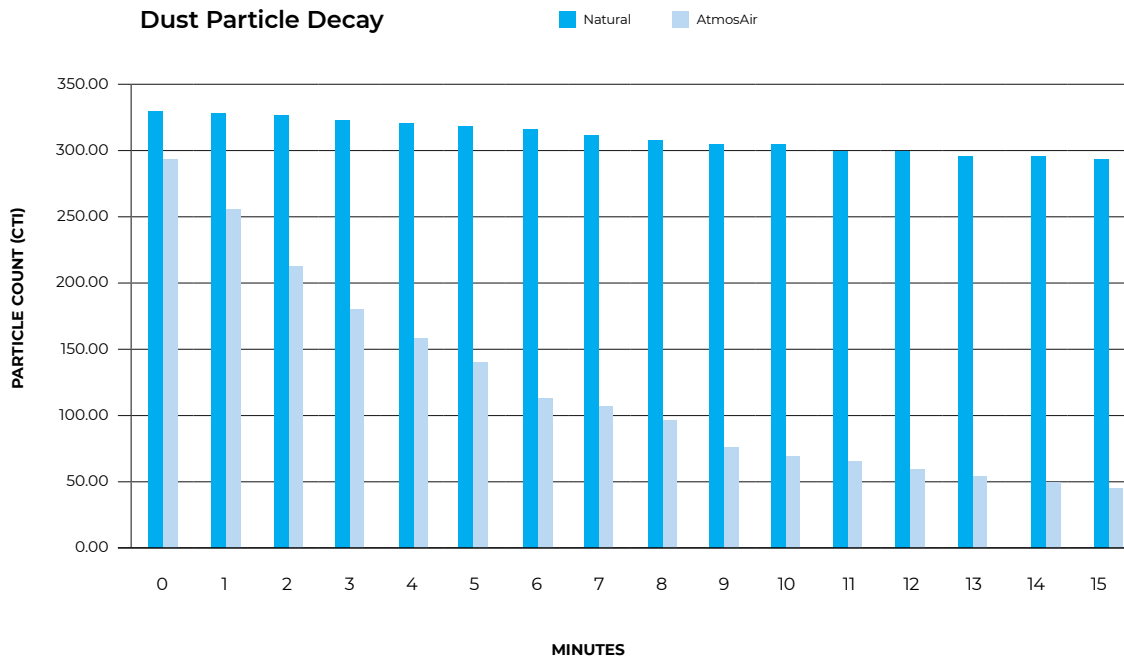
Time from turn on AC (hr)	hexane	2-butanone	iso-butanol	toluene	tetrachloroethylene	hexanal	ethylbenzene	decane
0.000	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0.225	87.4%	84.3%	68.6%	87.1%	88.7%	79.6%	89.4%	93.7%
1.008	63.9%	63.8%	32.1%	57.4%	61.1%	36.9%	58.9%	65.6%
2.008	43.6%	36.6%	20.9%	31.9%	40.0%	12.9%	34.0%	36.3%
4.075	21.1%	25.7%	9.4%	11.2%	18.8%	5.1%	11.0%	12.4%



Study Conclusion

Test results showed good regression and repeatability between the two duplicate tests. Test indicated that AtmosAir air cleaners reduced the concentrations in the chamber air (57.12 m³ in volume) for Hexane by 94.6%, 2-Butanone by 91.1%, Iso-butanol by 97.1%, Toluene by 98%, Tetrachloroethylene by 94.5%, Hexanal by 97.5%, Ethylbenze by 96.3% and Decane by 96.4% over the 6 hours pull-down test period. These corresponded to the equivalent clean air delivery rate (CADR) for the two units tested to range from 12 cfm to 22.5 cfm, depending of the VOCs.

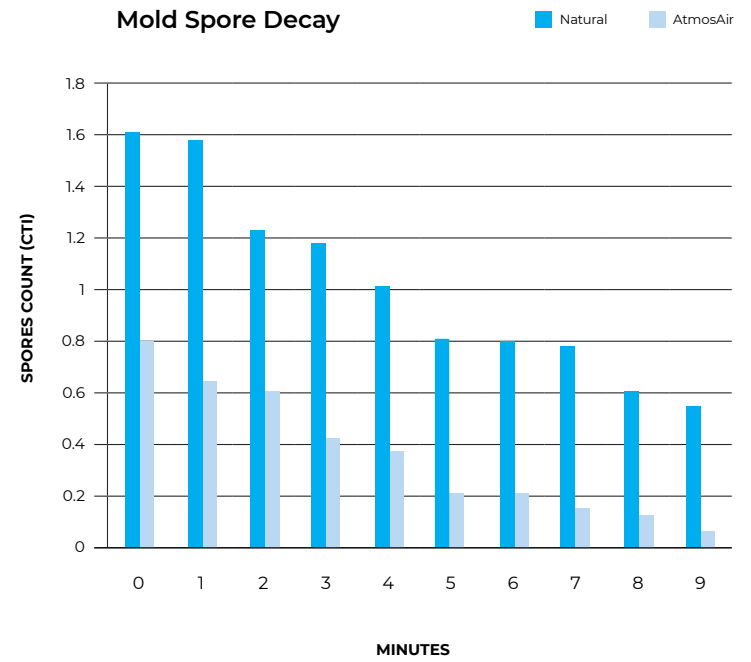
Clean Air Delivery Rate (CADR) Test vs. Particulate Matter (0.3 Micron)



Clean Air Delivery Rate Testing - Third Party Testing Against Particulate Matter (PM) with ETL.

Study Summary

To an ANSI and AHAM structured CADR test vs. ultra-fine particulate matter (PM0.3), AtmosAir proved to reduce particles by 86% relative to natural dissipation within 15 minutes. AtmosAir tested to a 125 Dust CADR and a 158 test CADR.



AtmosAir Mold Clean Air Delivery Rate (CADR) Testing at ETL Labs.

Third Party Testing

Global Brand of Full-Service

Test Result:

Test by Corporate Engineering team saw an average of a 75% reduction of airborne spores after AtmosAir was installed in the rooms that they tested.

Test Background:

AtmosAir was asked to measure the effect of their air purification systems on the Indoor Air Quality (IAQ) for a number of guest rooms in blind study. AtmosAir bipolar ionization air purification systems were installed into the fan coil units that serve each room. Air quality measurements were taken both before systems were installed and with the AtmosAir systems operating.

Third party testing was contracted by Hilton. Testing was completed by Air Quality Assessors of Florida (AQA).

Test Type	Room #	Before	After	Reduction %
RAW Count Mold Spores	2540	110	41	64%
	2327	926	9	99%
	1836	275	20	89%
	1074	19	11	42%
	555	62	12	82%
Outdoor Air	n/a	1	20	n/a
Spores/m³	2540	1467	547	63%
	2327	12347	120	99%
	1836	2333	267	89%
	1074	253	147	42%
	555	827	169	81%
Outdoor Air	n/a	13	276	n/a
TVOC's	2540	3700	1400	62%
Mold VOC's	2540	7	5	29%



Testing - Healthcare Institution - Chicago, IL AtmosAir's Effects on Microorganisms

Testing by EMSL Laboratories

Bacteria Type	Pre AtmosAir AtmosAir CFU/M ³	Post AtmosAir AtmosAir	% Difference
Bacillus Flexus	14	ND	-100%
Bacillus Marisflavi	7	ND	-100%
Kocuria Rosea	28	ND	-100%
Micrococcus Luteus	49	ND	-100%
Staphylococcus Lugdunensis	140	ND	-100%
Total	238	ND	-100%

Test Result

Leading Medical Center and University bacteria sampling results showing bacteria measurements that are so low that they are considered undetectable.

AtmosAir's Effects on Microorganisms

Grocery Store - New York, NY

Reduction of microorganisms will result in less possibility of transmission of illness and allergic symptoms as well as that it will have positive impact on exposed perishable food items.

The AtmosAir systems before & after tests of IAQ were both taken in below two venues.

A New York City grocery store's main front end area of the store had a reduction of bacteria up to 80% while the fungi was found non-detectable. Main front end area of the store. The reduction of bacteria is up to 80% while the fungi was found non-detectable.

Bacteria/ Fungi	Pre AtmosAir AtmosAir	Post AtmosAir AtmosAir	Difference
Bacillus licheniformis	2 CFU	ND	-100%
Kocuria sp.	10 CFU	ND	-100%
Staphylococcus saprophyticus	6 CFU	ND	-100%
Total Bacteria Colony Count	20 CFU	4 CFU	-80%
Fungi			
Cladosporium herbarum	1	ND	62%
Total Fungi	1	ND	29%

*CFU: ND, Dagostinos's Market on 1507 York Ave, New York, NY. Across from the deli section in a grocery aisle. The reduction of bacteria is up to 57% while the fungi was found non-detectable.

	Pre AtmosAir AtmosAir	Post AtmosAir AtmosAir	Difference
Bacteria Total Colony Count	27	3	-57%
Bacteria CFU	49	21	-57%
Fungi Total Colony Count	1	ND	-100%
Fungi CFU	7	ND	-100%

*ND

AtmosAir's Effects on Microorganisms

The test was conducted by third party for certain bank headquarter in Bangkok, Thailand to see the difference before and after the installation of AtmosAir systems.

Space		Bacteria cfu/m ³
Floor 7 - Office	Before	>1307
	After	234

▲ **1st TEST** – office on 7th floor reduced at least 82%.

▶ **2nd TEST** – Reductions show in almost all index after the installation of **AtmosAir**. Especially the highlighted bacteria and mold data, the bacteria on 3rd floor Building One reduced at least 92.7% while the mold on 20th floor Building Two reduced at 67%.

Space		PM2.5	Bacteria cfu/m ³	Mold cfu/m ³
Building One				
Floor 3 - Office	Before	36	>1307	107
	After	14	95	107
Building Two				
Floor 2 - Office	Before	22	107	86
	After	8	53	59
Floor 12 - Call Center	Before	26	158	92
	After	11	131	71
Floor 17 - Office	Before	26	162	102
	After	13	146	73
Floor 20 - Office	Before	27	282	146
	After	15	95	48
Singapore Standard		36	500	500

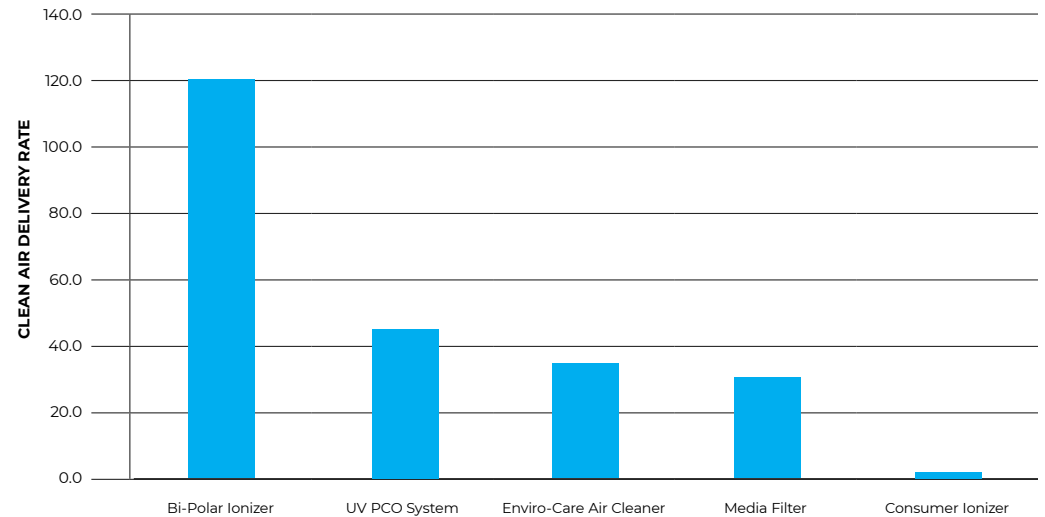
CADR Comparison

Air Cleaner Test Results (CADR)

Product	CADR Rateing	BPI variance
AtmosAir	125	n/a
Lennox Healthy Climate PCO-12C	47.4	264%
Honeywell Enviro-Care F300E	35.8	349%
White-Rodgers SST 1000	27.2	460%
Sharper Image Ionic Breeze	4.8	2604%

Report Intertek, ETL Semko

3033 US Route 11 Cortland, New York 13045



The Difference is the Technology

AtmosAir vs. Competing IAQ Technologies

- CADR is a standard developed by ANSI (American National Standards Institute) and AHAM (American Home Appliance Manufacturers).
- CADR is used to measure a product's effectiveness on particle removal within a space



Source: ETL Testing Laboratories

Manufacturer/Tech	CADR Rate	Variance from CAG(%)
AtmosAir Bi Polar Ionization (BPI)	125	n/a
Photocatalytic Oxidation (PCO)	47.4	264%
Honeywell Electronic Air Cleaner	35.8	349%
Electrostatic Air Cleaner	27.2	460%
Negative Ion Generator	4.8	>2500%
Needlepoint Ionization	0.4	>2500%

CADR = Clean Air Delivery Rate

Source: Intertek Laboratories

