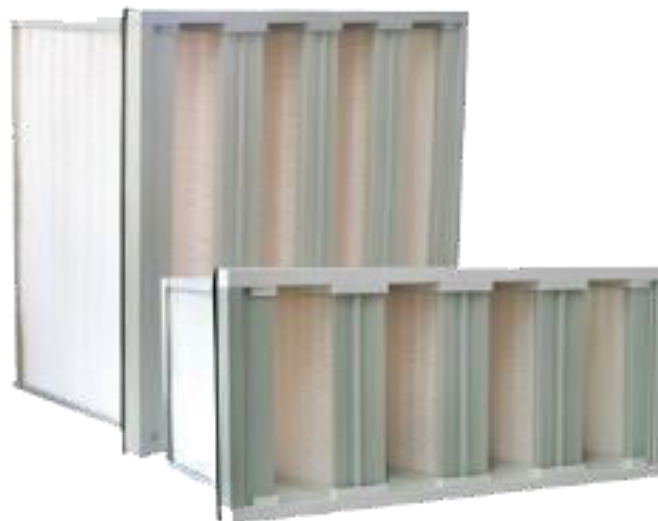


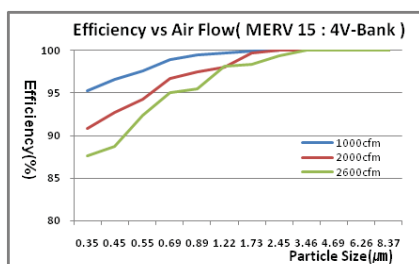
V Bank Filter

Mini-Pleated Panels made with Layered, Melt-blown Synthetic Media

- Layered, melt-blown, synthetic mini-pleated panels improve performance
- Neoprene sponge rubber gasket mounted to an ABS Frame sealed with a poly-urethane sealant
- Available in:
MERV-A 16-A, MERV-A 15-A, MERV 16,
MERV 15, MERV 13 and E10
- Innovative Clean & Science Antimicrobial Technology



Clean & Science V Bank Filter MERV 13 and higher meet public safety criteria established UL Classification.



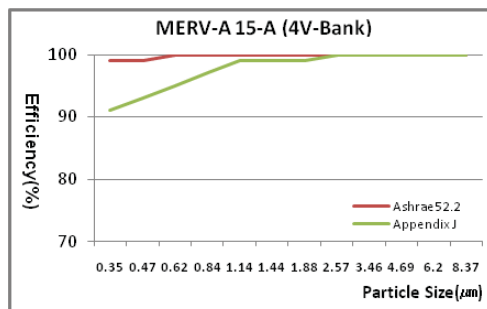
4V Bank: Fractional Efficiency (0.2~20µm)

The Clean and Science V Bank Filters offer our customers a unique combination of performance and design features including integral gaskets and layered synthetic mini-pleat panels. These filters are an excellent choice for building owners and facility managers looking to reduce their energy utilization and minimize their total cost of operation, while still providing building occupants with high quality filtered air.

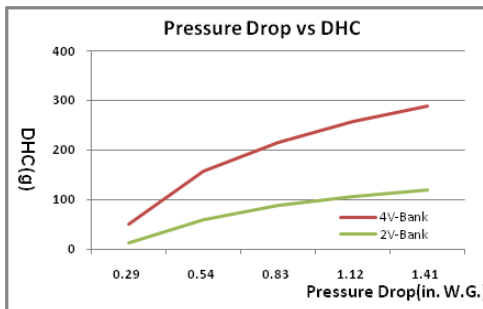
Using Clean & Science technologies, these commercial HVAC filters offer an industry leading combination of low pressure drop, robust efficiency, longevity, low weight as well as unique design features. These design features include synthetic layered mini-pleat panels for reduced pressure drop and highly engineered media with a precise balance of mechanical and electret characteristics. The robust efficiency of these filters is tested to the rigorous industry filter conditioning standards – ASHRAE 52.2: 2007 Appendix J.

Clean and Science V-Bank Filters feature HVAC filters with innovative integral gaskets. An exceptional value added feature, which helps prevent unfiltered air from flowing past gaps between the filter and the filter rack. The integral gaskets from Clean & Science are factory installed, which not only save time during installation, but ensure that gaskets will be used.

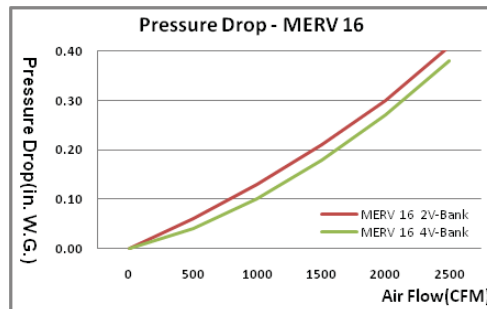
- Industry leading low pressure drop
- Long filter life
- Large dust holding capacity
- Antimicrobial Technology
- Factory installed gaskets for reduction of air bypass



MERV-A 15-A (Appendix J)



Dust Holding Capacity vs Pressure Drop



MERV 16: Pressure Drop on 2 & 4 V Bank filters

		FTVB AM4 M16A-AAG	FTVB AM4 M15A-AAG	FTVB AM4 M15S-AAG	FTVB AM3 M16A-TTG
MERV		MERV-A 16-A	MERV-A 15-A	MERV 15	MERV-A 16-A
Standard Holding Frame Media	inch	23 3/8 x 23 3/8 Melt-Blown	23 3/8 x 23 3/8 Melt-Blown	23 3/8 x 23 3/8 Melt-Blown	19 3/8 x 19 3/8 Melt-Blown
Bank Unit		4 V	4 V	4 V	3 V
Frame Depth	inch	11 1/2	11 1/2	11 1/2	11 1/2
Weight	lbs	15.2	15.2	15.2	11.0
Header Size	inch	23 3/8	23 3/8	23 3/8	19 3/8
Rated Air Flow	CFM	2000	2000	2000	1650
Initial Resistance (2000cfm)	in. W.G.	0.26	0.26	0.23	0.4 (1650cfm)
Media Area	ft ²	172	172	172	107
Temperature Resistance	°F	158	158	158	158

Key Benefits

- Potential for reduction in electrical energy consumption due to industry leading low initial pressure drop of the Clean & Science V-Bank Filters. These Commercial HVAC Filters may lead to substantial energy savings, when compared to competitive V-Bank or box filters with the same efficiency.
- The Clean & Science V-Bank Filters MERV A13 with Gasket or higher meet the Facilities Guidelines Institutes (ANSI / ASHRAE / ASHE Standard 170 - 2008) requirements for hospitals and healthcare facilities where MERV 13 primary filters are required.
- Clean & Science V-Bank Filters have long filter life, due to their unique combination synthetic filtration media, the miniature layered pleat structure and high filter media area.
- Factory installed gaskets ensure correct installation and usage, resulting in consistent reduction of air bypass.
- The factory installed gaskets of Clean & Science V-Bank Filters eliminate the need for additional labor to install gaskets on-site.
- Due to their lightweight frame construction, Clean & Science V-Bank Filters are easier to handle, transport, and install than many comparable V-Bank filters and metal box filters. Lighter weight is especially important when HVAC filters must be manually carried to the air handler.
- Clean & Science V-Bank Filters are 100% synthetic, resulting in moisture and humidity resistant, corrosion free filters that do not support mold growth.
- Clean & Science V-Bank Filters are 100% metal free and fully incinerable.
- Clean & Science V-Bank Filters meet UL 900 flammability rating (US) and UL 900 Class 2 flammability rating (Canada).

CAUTION: USED FILTERS MAY CONTAIN CONTAMINANTS FROM OPERATION OF THE HVAC SYSTEM. FOR PROPER HANDLING OF USED FILTERS, CONSULT APPLICABLE HEALTH AND SAFETY STANDARDS OR CONTACT AN INDUSTRIAL HYGIENIST. TO REDUCE RISK OF ILLNESS OR INJURY, ALWAYS USE APPROPRIATE RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING WHEN REMOVING OR HANDLING USED FILTERS. DISPOSE OF USED FILTERS ONLY IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS AND REGULATIONS.

IMPORTANT USE RESTRICTIONS: DO NOT EXPOSE THIS FILTER DIRECTLY TO UV RADIATION FROM A UV PURIFICATION SYSTEM. EXCESSIVE UV EXPOSURE MAY LEAD TO A REDUCTION IN THE MECHANICAL INTEGRITY AND PERFORMANCE OF THE FILTER. THIS FILTER MUST NOT BE USED FOR THE FOLLOWING UNAUTHORIZED USES: A) ASBESTOS, LEAD OR MOLD REMEDIATION; B) BIOTERRORISM PROTECTION; C) APPLICATIONS IN BUILDINGS THAT REQUIRE OR ARE UNDERGOING AIR HANDLING SYSTEM REMEDIATION OF HAZARDOUS SUBSTANCES; OR (D) PROTECTIVE ENVIRONMENTS PER AIA GUIDELINES.



P.O. Box 23773
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www.AirfiltersNW.com





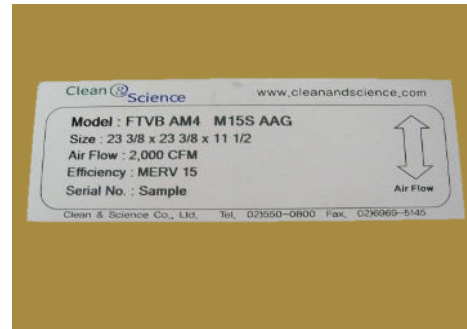
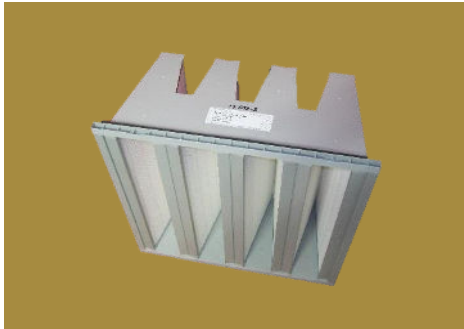
2820 S. English Station Road - Louisville, KY 40299
Tel: (502) 357-0132 Fax (502) 267-8379

Date: 20-Feb-17 TEST NO. 17-092-3

Test Report ANSI/ASHRAE Standard 52.2-2012 with 2015 Supplement

Filter Description

Manufacturer	Clean and Science Co., LTD.
Filter Model	FTVB AM4 15S AAG
Part Number	N/A
Generic Filter Type	Single Header Type
Nominal Dimensions (H x W x D)	24" x 24" x 12" (594mm x 594mm x 292mm)
Pocket / Pleat Quantity	4V
Media Type	QAMD090-90TH (CS)
Est. Gross Media Area	174.38 Ft ² (16.2 m ²)
Adhesive Type	Poly-Urethane



Test Conditions

Loading Dust Type	ASHRAE	Test Air Temp (degrees F.)	71
Barometric Pressure (In. Hg.)	29.25	Relative Humidity (%)	45

Test Results

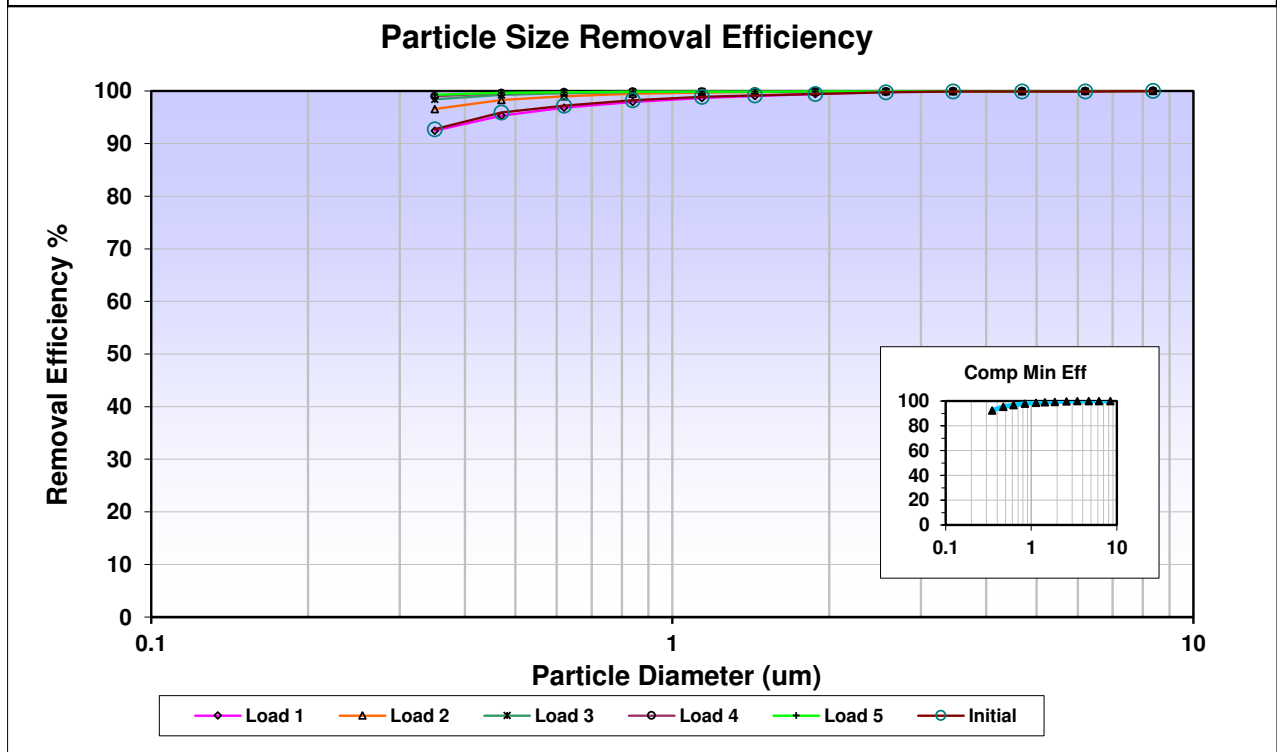
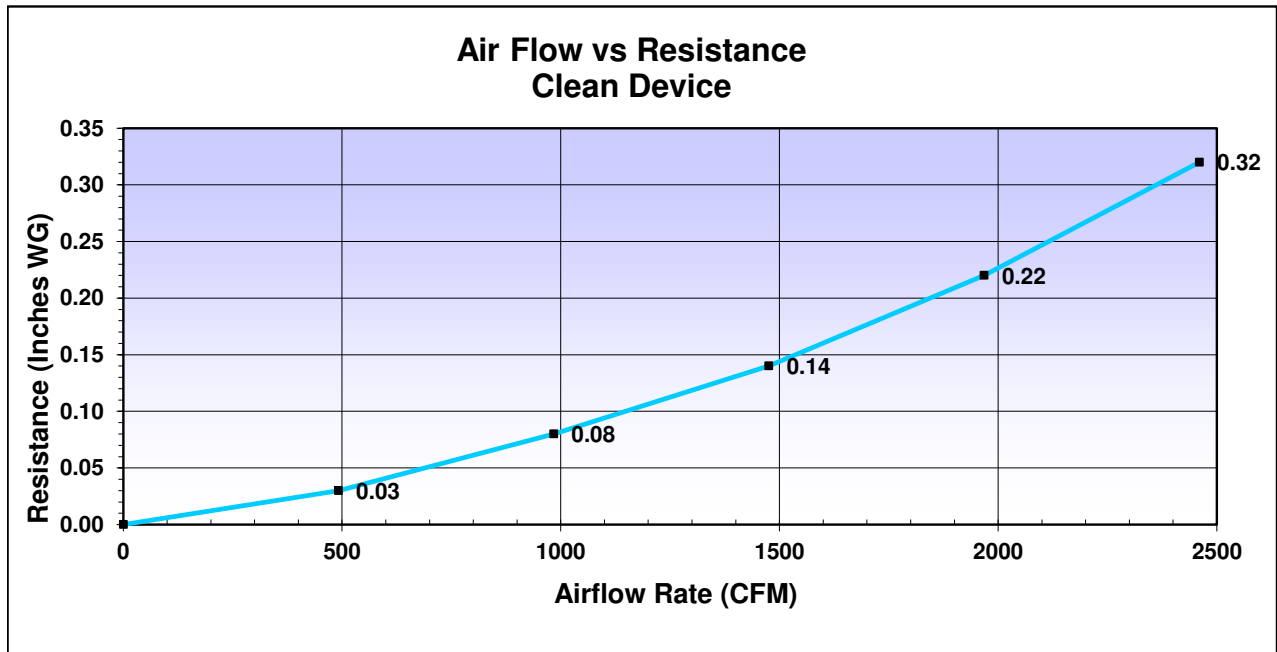
Airflow Rate (CFM)	1968
Nominal Face Velocity (fpm)	492
Initial Resistance (in WG)	0.22
Final Resistance (in WG)	1.50
Dust Fed (gms) to Final Resistance	270
E1 (%) Composite Minimum Avg. Efficiency 0.30 - 1.0 um	96
E2 (%) Composite Minimum Avg. Efficiency 1.0 - 3.0 um	99
E3 (%) Composite Minimum Avg. Efficiency 3.0 - 10.0 um	100
Minimum Efficiency Reporting Value (MERV)	MERV 16 @ 1968 CFM

Comments Tested For: Clean and Science Co., LTD.
Final Pressure Drop ("w.c.) 1.50"w.c.
Dust Holding Capacity (gms) 270
Average Arrestance (%) 100.0

Test Performed by: JPS

Approved By:

Test Completed: 20-Feb-17



Data - Initial Resistance

Airflow (CFM)	Resistance (in WG)
0	0.00
492	0.03
984	0.08
1476	0.14
1968	0.22
2460	0.32

Data - Particle Removal Efficiency

Particle Size Range (µm)	Geometric Mean Diam (µm)	Particle Removal Efficiency (%)							
0.30 - 0.40	0.35	92.5	92.7	92.5	96.6	98.4	99.0	99.3	
0.40 - 0.55	0.47	95.3	95.9	95.3	98.3	99.3	99.6	99.7	
0.55 - 0.70	0.62	96.8	97.2	96.8	99.0	99.6	99.8	99.8	
0.70 - 1.00	0.84	97.9	98.3	97.9	99.5	99.8	99.8	99.8	
1.00 - 1.30	1.14	98.7	98.9	98.7	99.7	99.9	99.9	99.9	
1.30 - 1.60	1.44	99.0	99.1	99.0	99.8	99.9	99.9	99.9	
1.60 - 2.20	1.88	99.4	99.4	99.4	99.9	99.9	99.9	99.9	
2.20 - 3.00	2.57	99.8	99.8	99.8	99.9	99.9	99.9	99.9	
3.00 - 4.00	3.46	99.9	99.9	100.0	100.0	100.0	100.0	99.9	
4.00 - 5.50	4.69	99.9	99.9	100.0	100.0	100.0	100.0	100.0	
5.50 - 7.00	6.20	99.9	99.9	100.0	100.0	100.0	99.9	100.0	
7.00 - 10.00	8.37	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
		CME	Initial	Load 1	Load 2	Load 3	Load 4	Load 5	
Resistance after Dust Load (in w.c.) ----->				0.24	0.54	0.86	1.18	1.50	
Dust Load (gms) ----->				30	145	205	238	270	

Test Data for Release Rate (%)						
Size Range	Geometric Mean of Particle Size Range, µm	Release Rate After Loading	Release Rate After Loading	Release Rate After Loading	Release Rate After Loading	Release Rate After Loading
No.		Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
1	0.35	0.052	0.009	0.005	0.004	0.003
2	0.47	0.017	0.001	0.001	0.002	0.001
3	0.62	0.004	0.001	0.000	0.003	0.000
4	0.84	0.002	0.001	0.001	0.002	0.001
5	1.14	0.000	0.000	0.002	0.004	0.000
6	1.44	0.000	0.004	0.003	0.003	0.003
7	1.88	0.006	0.002	0.002	0.003	0.002
8	2.57	0.014	0.001	0.005	0.008	0.009
9	3.46	0.051	0.000	0.005	0.010	0.008
10	4.69	0.083	0.016	0.012	0.032	0.008
11	6.2	0.000	0.038	0.034	0.024	0.074
12	8.37	1.004	0.000	0.049	0.112	0.000

CnS Synthetic MB High Volume / Performance filter

Description

- Available in 6V, 4V for full size
2V half size
- Media : Synthetic (3Layers :
melt-blown /non-woven / melt-blown
- Frame Material: Galvanized steel,
Aluminum
- Pack : Mini pleat Panels
- Sealant : Poly-Urethane
- Pleats per inch: 7~8 Pleats
- Available in European and ASHRAE Sizes

Applications

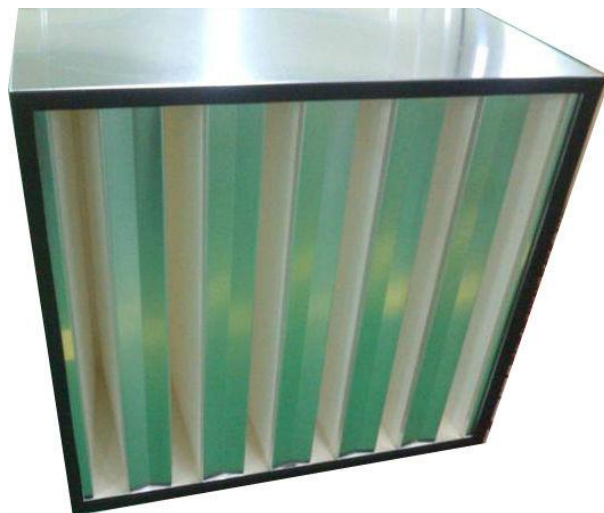
- Hospitals
- Biomedical
- Pharmaceutical
- Biotechnology
- Genetic Research
- Food Processing
- Photo Processing
- Gas turbine inlet Air System
- Semiconductor Fabrication
- Industrial Processing System

Application Parameter

- 158°F Max Continuous temperature
- Humidity: 100%
- Efficiency: 99.97% @ 0.3 um

Benefit

- Low initial pressure drop
(than the Glass)
- High DHC
- Cost Saving
 - Energy saving due to Low Pressure Drop
 - Replacement cost saving due to long life
- Will not support microbial growth
- High bursting strength



FILTER PERFORMANCE CERTIFICATE

Clean&Science Co.,Ltd. (www.cands.co.kr)

#934,CHUNGUP 3rd Industiral Com.

Bukmyon, Chungup City Chollabuk Do, Korea

Tel 82-2-550-0900

Head Office Tel 82-2-550-0800

Fax 82-63-536-7887

Fax 82-2-551-0225



Filter:	<u>HEPA Filter</u>	Frame	<u>A/L</u>
Manufacturer:	Clean&Science	Media	<u>MB(35g) + Thermal Support(70g) + MB(35g)</u>
Man-No.:	-	Separator	<u>Hot-Melt (25mm)</u>
Face Area:	-	Filter Area:	<u>610 x 610 x 292T, 6P</u>
Flowrate:	<u>2410 CFM</u>	Status:	<u>C&S</u>
		Comment:	<u>Pack Dimension : 284 x 610 x 25T x 180P</u>

Test

File name: High Volume HEPA Filter

Date: 2/18/2014

Weight: -

Temperature 21℃

Time: -

Tare Pressure: -

Relative Humidity 61%r.F.

Operator: SCCHOI

Test Aerosol PAO

Differential Pressure

Fractional Efficiency Test

Flowrate V [CFM]	Diff.Press dp(V) [in Wg]	Particle size [μm]	Upstream [#]	Downstream [#]	Efficiency [%]
353	0.110	0.3	365764	10	99.997%
706	0.224	0.5	169970	5	99.997%
1059	0.350	1.0	28899	0	100.000%
1412	0.448	3.0	696	0	100.000%
1765	0.744	5.0	67	0	100.000%
2401	1.000	10.0	27	0	100.000%

