Camfil USA
1 North Corporate Drive
Riverdale, NJ 07457
(973) 616-7300

ASHRAE 52.2-2017 Test Results w/Appendix J Results

Filter Description

Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV11 24x24x2**	**855142-001**

Filter Type	Media Type	Media Color	Media Area (ft^2)
Minipleat	**Synthetic**	**White**	**54**

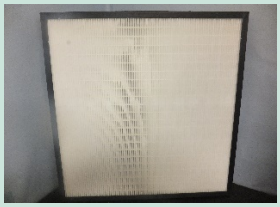
Nominal Size	Actual Size				
HxWxD	Hgt (in)	Wid (in)	Dep (in)	Pleats/Pockets	UL Rating
24"x24"x4"	**23 3/8**	**23 3/8**	**3 3/4**	**114**	**Yes**

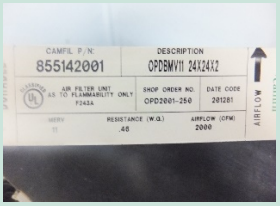
ASHRAE 52.2-2017

Test Report:	200609_1834		
Time:	8:45:04	Date:	20/06/09

Test Data	Test Results	Rated Values	
AirFlow (cfm)	2005	2000	
Nominal Vel (fpm)	501	500	
Initial ΔP (inWG)	0.41	0.46	
MERV	12	11	@2005cfm
E_1 (0.3-1.0μm), (%)	57	≥ 20	
E_2 (1.0-3.0μm), (%)	85	≥ 65	
E_3 (3.0-10μm), (%)	97	≥ 85	
Final DP, (inWG)	1.0	1.0	
Arrestance, (%)	99	95	
DHC, (g)	107		

Temp, (F)	74	Test Aerosol	KCL
RH, (%)	48	Loading Dust	ASHRAE





ASHRAE 52.2-2017 w/App J

Test Report:	200615_1847		
Time:	11:36:00	Date:	20/06/15

Test Data	Test Results	Rated Values	
AirFlow (cfm)	2002	2000	
Nominal Vel (fpm)	501	500	
Initial ΔP (inWG)	0.37	0.46	
MERV-A	11A	11A	@2002cfm
E_1-A (0.3-1.0μm), (%)	37	≥ 20	
E_2-A (1.0-3.0μm), (%)	71	≥ 65	
E_3-A (3.0-10μm), (%)	95	≥ 85	
Final DP, (inWG)	1.0	1.0	
Arrestance-A, (%)	98	95	
DHC-A, (g)	117		

Temp, (F)	74	Test Aerosol	KCL
RH, (%)	49	Loading Dust	ASHRAE

Certified Test Per ASHRAE 52.2-2017

Approval:	*Don Thornburg, R&D Manager* **Electronic Signature, Original on file**

Operator	Particle Counter	Model
AA	**TSI**	**OPS-3330**

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ASHRAE® 52.2-2017 Test Results

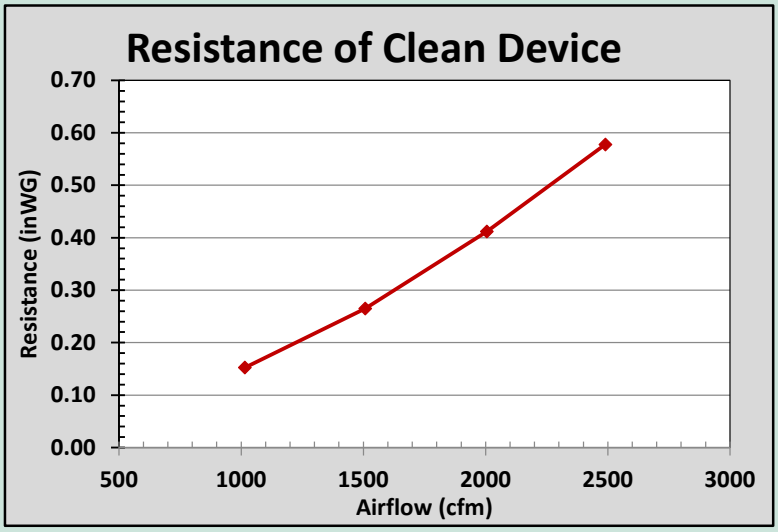
Date:	20/06/09	Test Report:	200609_1834

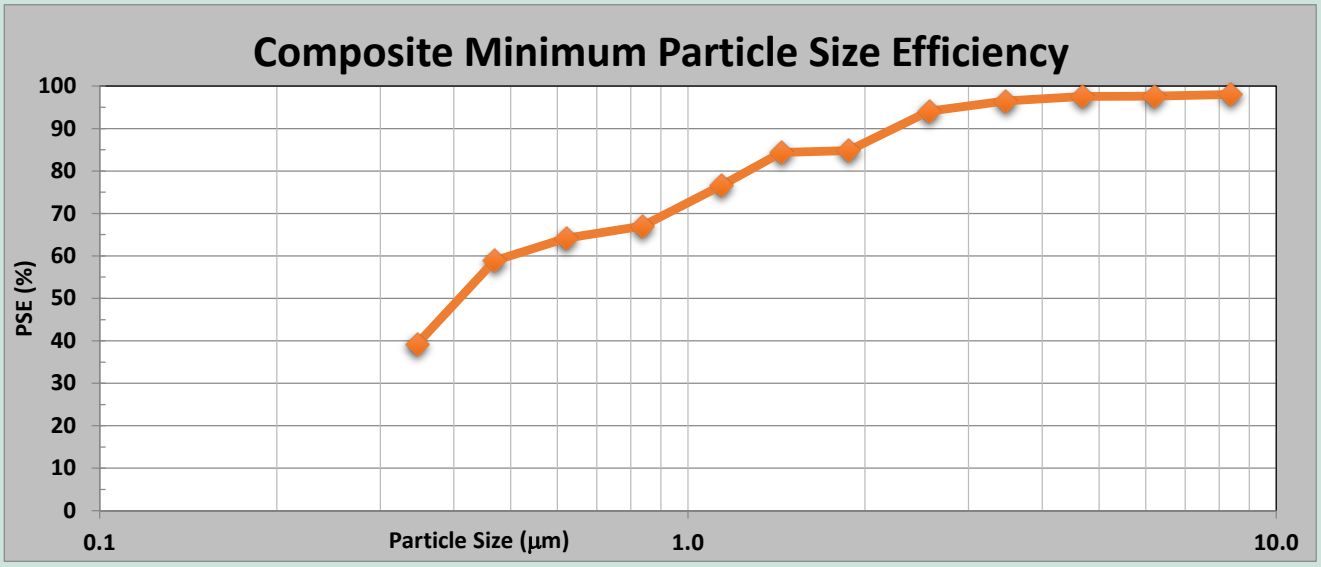
Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV11 24x24x2**	**855142-001**

Clean Resistance Table

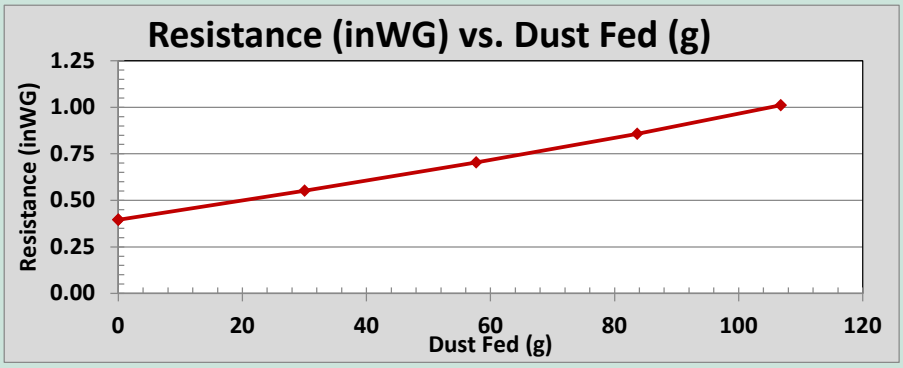
cfm	*m^3/s*	*inWG*	*Pa*
1015	0.48	0.152307	38
1508	0.71	0.265231	66
2005	0.95	0.411912	103
2490	1.18	0.577882	144

248.8454





ΔP (inWG)	Dust Fed (g)
0.40	0
0.40	0
0.55	30
0.70	58
0.86	84
1.01	107



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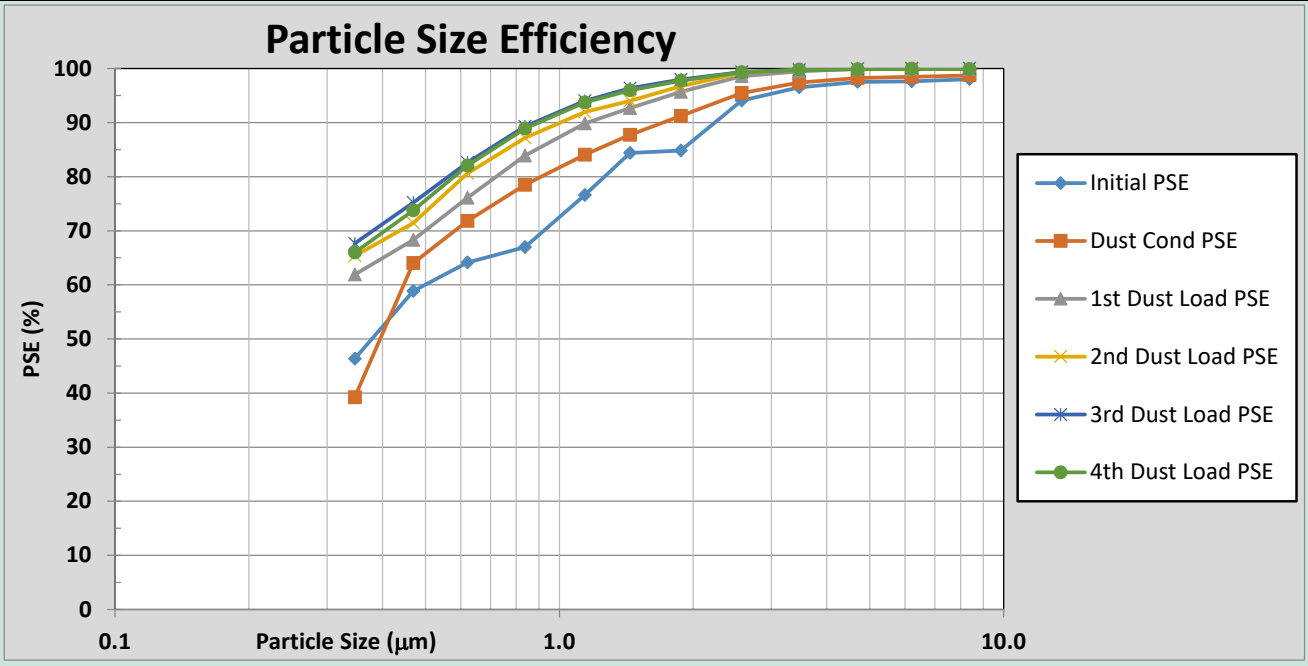
ASHRAE® 52.2-2017 Test Results

Date:	20/06/09	Test Report:	200609_1834
Manufacturer		Filter Model	Filter Part Number
Camfil USA		**OPDBMV11 24x24x2**	**855142-001**

Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**46**	**59**	**64**	**67**	**77**	**84**	**85**	**94**	**96**	**98**	**98**	**98**
Dust Cond PSE	**39**	**64**	**72**	**79**	**84**	**88**	**91**	**95**	**97**	**98**	**98**	**99**
1st Dust Load PSE	**62**	**68**	**76**	**84**	**90**	**93**	**96**	**99**	**99**	**100**	**100**	**100**
2nd Dust Load PSE	**65**	**71**	**81**	**87**	**92**	**94**	**97**	**99**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**68**	**75**	**83**	**89**	**94**	**96**	**98**	**99**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**66**	**74**	**82**	**89**	**94**	**96**	**98**	**99**	**100**	**100**	**100**	**100**
Composite Min PSE	**39**	**59**	**64**	**67**	**77**	**84**	**85**	**94**	**96**	**98**	**98**	**98**



All testing is performed in compliance with the latest revision of ASHRAE Standard 52.2 in a state-of-the-art laboratory facility located at the Camfil USA headquarters in Riverdale, NJ. Test Reports without DHC values show efficiency only and the associated MERV value is a estimated value based on the single efficiency data shown. For more information, contact your local Camfil representative or distributor.

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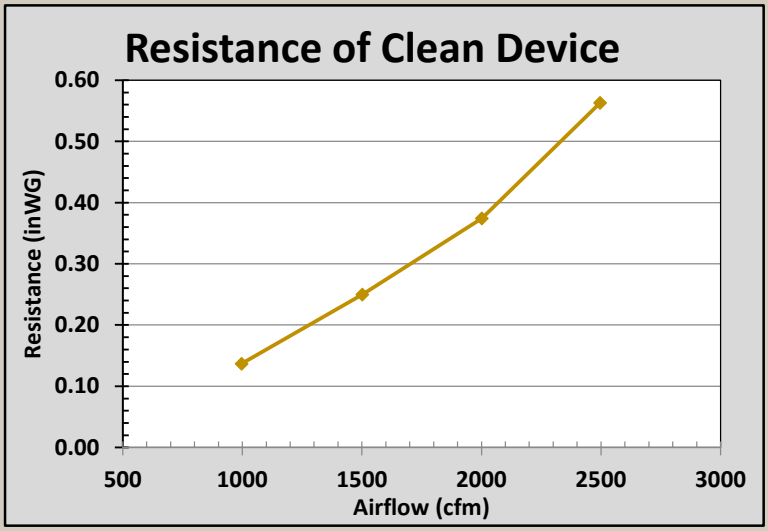
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

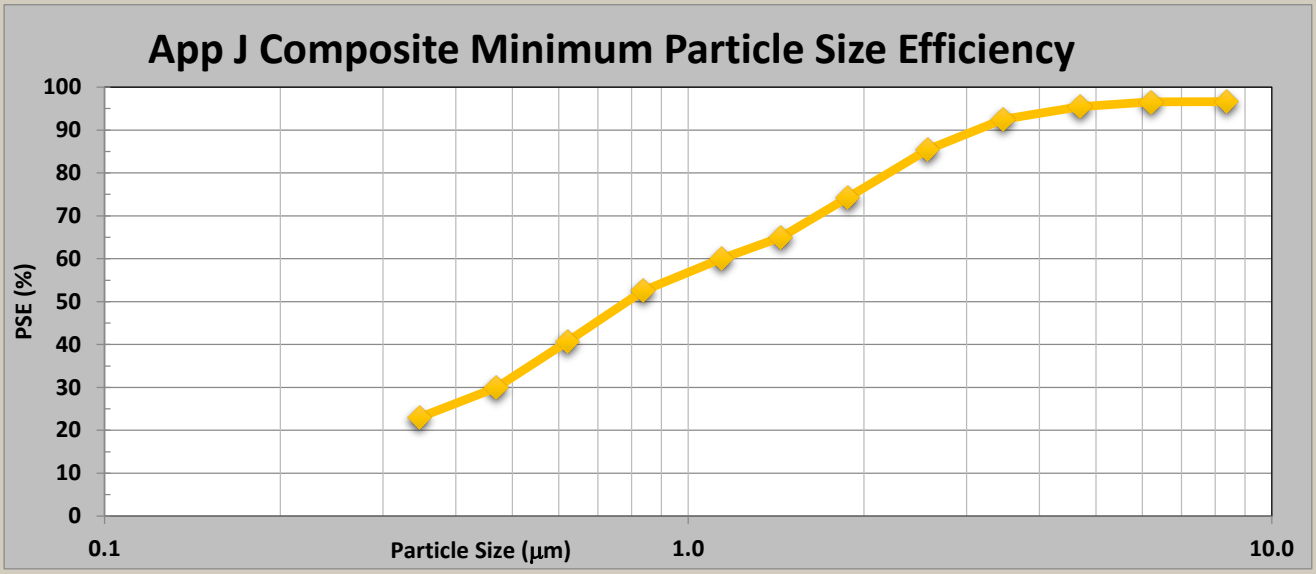
Date:	20/06/15	Test Number:	200615_1847

Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV11 24x24x2**	**855142-001**

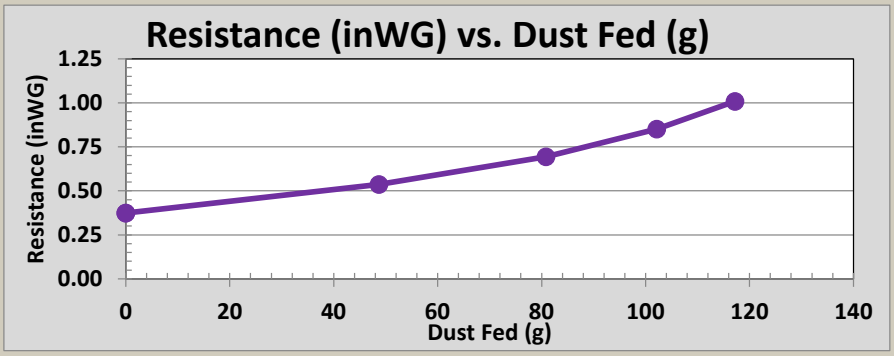
Clean Resistance Table

cfm	*m^3/s*	*inWG*	*Pa*
997	0.47	0.136896	34
1502	0.71	0.249867	62
2002	0.94	0.374398	93
2497	1.18	0.563228	140





ΔP (inWG)	Dust Fed (g)
0.37	**0**
0.37	**0**
0.54	**49**
0.69	**81**
0.85	**102**
1.01	**117**



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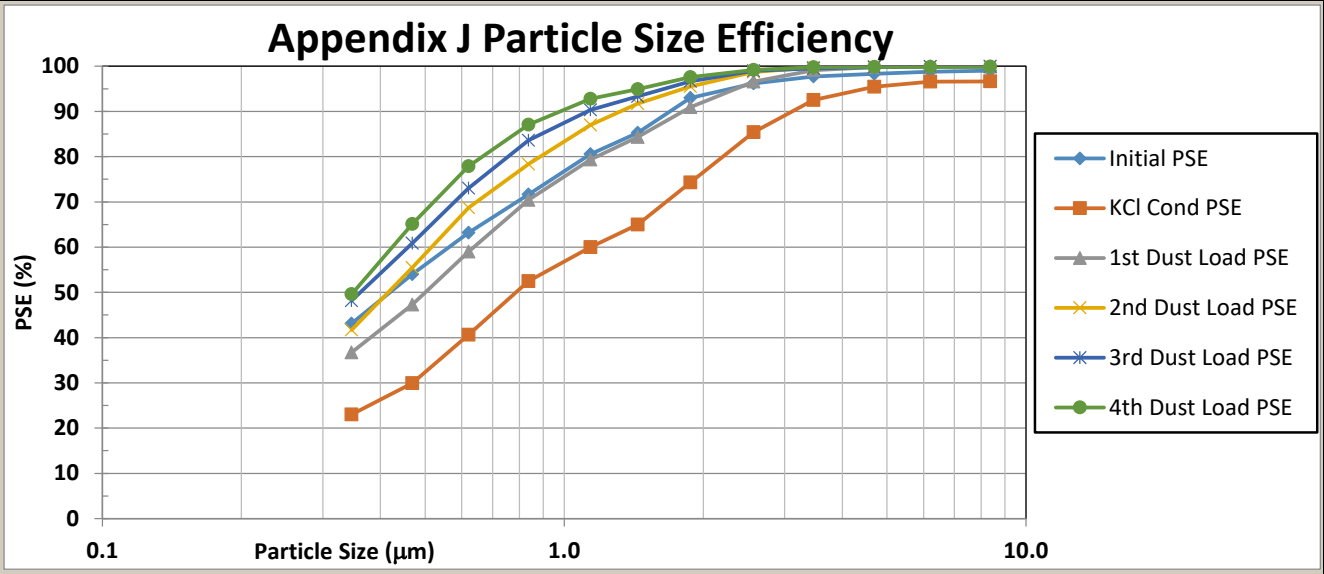
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	20/06/15	Test Number:	200615_1847
Manufacturer		Filter Model	Filter Part Number
Camfil USA		**OPDBMV11 24x24x2**	**855142-001**

App J Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**43**	**54**	**63**	**72**	**81**	**85**	**93**	**96**	**98**	**98**	**99**	**99**
KCl Cond PSE	**23**	**30**	**41**	**52**	**60**	**65**	**74**	**85**	**92**	**95**	**97**	**97**
1st Dust Load PSE	**37**	**47**	**59**	**70**	**79**	**84**	**91**	**97**	**99**	**100**	**100**	**100**
2nd Dust Load PSE	**42**	**55**	**69**	**78**	**87**	**92**	**96**	**99**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**48**	**61**	**73**	**84**	**90**	**93**	**97**	**99**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**50**	**65**	**78**	**87**	**93**	**95**	**98**	**99**	**100**	**100**	**100**	**100**
Composite Min PSE	**23**	**30**	**41**	**52**	**60**	**65**	**74**	**85**	**92**	**95**	**97**	**97**



Bkg Concentration (particles/cm^3)	Avg Cond Aerosol Conc (particles/cm^3)	Cumulative Cond Duration (minutes)	Cumulative Cond CT (particles-min/cm^3)
15.0	**4.74E+05**	**357**	**1.69E+08**

Large Particle Concentration (Particles/cm^3)	Ratio Small to Large (>20,000)	Conditioning ΔP (inWG)		Same duct?
		Initial ΔP	Final ΔP	
21	**22,549**	**0.37**	**0.37**	**No**

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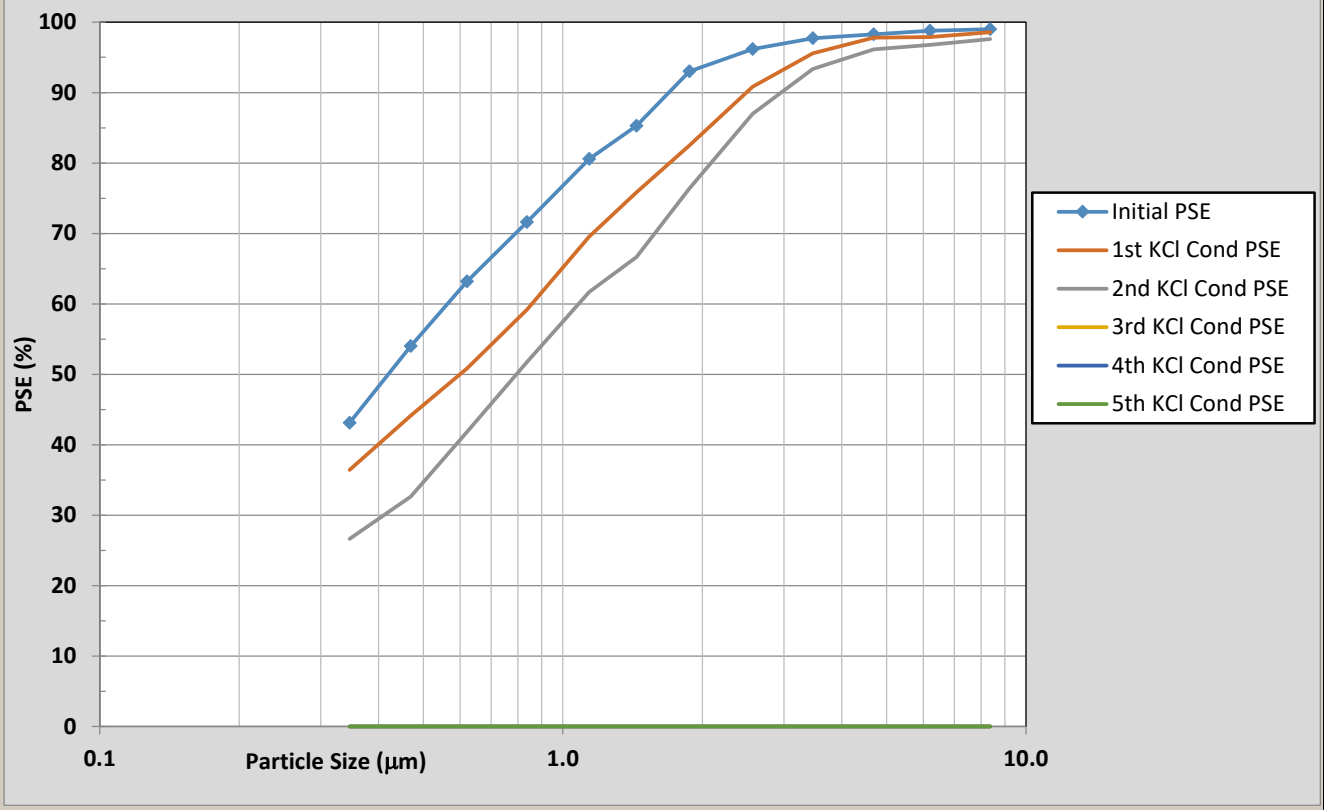
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	20/06/15	Test Number:	200615_1847
Manufacturer		Filter Model	Filter Part Number
Camfil USA		**OPDBMV11 24x24x2**	**855142-001**

KCl Conditioning Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**43**	**54**	**63**	**72**	**81**	**85**	**93**	**96**	**98**	**98**	**99**	**99**
1st KCl Cond PSE	**36**	**44**	**51**	**59**	**70**	**76**	**83**	**91**	**96**	**98**	**98**	**99**
2nd KCl Cond PSE	**27**	**33**	**42**	**52**	**62**	**67**	**76**	**87**	**93**	**96**	**97**	**98**
3rd KCl Cond PSE												
4th KCl Cond PSE												
5th KCl Cond PSE												
Final KCl Cond PSE	**27**	**33**	**42**	**52**	**62**	**67**	**76**	**87**	**93**	**96**	**97**	**98**

KCl Conditioning Particle Size Efficiency



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ASHRAE 52.2-2017 Test Results w/Appendix J Results

Filter Description

Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV11 24x24x4**	**855143-001**

Filter Type	Media Type	Media Color	Media Area (ft^2)
Mini pleat	**Synthetic**	**White**	**77**

Nominal Size	Actual Size				
HxWxD	Hgt (in)	Wid (in)	Dep (in)	Pleats/Pockets	UL Rating
24"x24"x4"	**23 3/8**	**23 3/8**	**3 3/4**	**69**	**Yes**

ASHRAE 52.2-2017

Test Report:	191212_1617		
Time:	12:06:01	Date:	Dec 12, 2019

Test Data	Test Results	Rated Values	
AirFlow (cfm)	1997	2000	
Nominal Vel (fpm)	499	500	
Initial ΔP (inWG)	0.40	0.37	
MERV	**13**	**11**	**@1997cfm**
E_1 (0.3-1.0μm), (%)	70	≥ 20	
E_2 (1.0-3.0μm), (%)	91	≥ 65	
E_3 (3.0-10μm), (%)	98	≥ 85	
Final DP, (inWG)	1.5	1.0	
Arrestance, (%)	98	93	
DHC, (g)	192		

Temp, (F)	75	Test Aerosol	KCL
RH, (%)	47	Loading Dust	ASHRAE

ASHRAE 52.2-2017 w/App J

Test Report:	200604_1727		
Time:	11:57:49	Date:	Jun 04, 2020

Test Data	Test Results	Rated Values	
AirFlow (cfm)	1995	2000	
Nominal Vel (fpm)	499	500	
Initial ΔP (inWG)	0.38	0.37	
MERV-A	**11A**	**11A**	**@1995cfm**
E_1-A (0.3-1.0μm), (%)	28	≥ 20	
E_2-A (1.0-3.0μm), (%)	69	≥ 65	
E_3-A (3.0-10μm), (%)	95	≥ 85	
Final DP, (inWG)	1.5	1.0	
Arrestance-A, (%)	98	95	
DHC-A, (g)	197		

Temp, (F)	73	Test Aerosol	KCL
RH, (%)	50	Loading Dust	ASHRAE

Certified Test Per ASHRAE 52.2-2017

Approval:	*Don Thornburg, R&D Manager* **Electronic Signature, Original on file**

Operator	Particle Counter	Model
AA	**TSI**	**OPS-3330**

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ASHRAE® 52.2-2017 Test Results

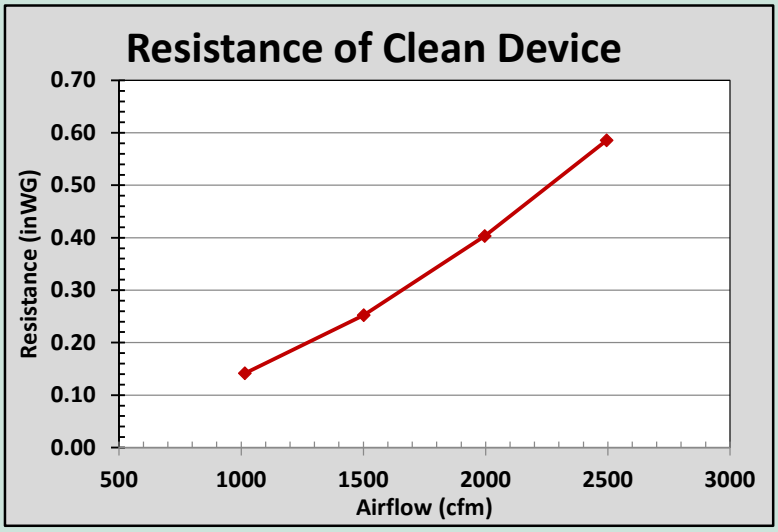
Date:	Dec 12, 2019	Test Report:	191212_1617

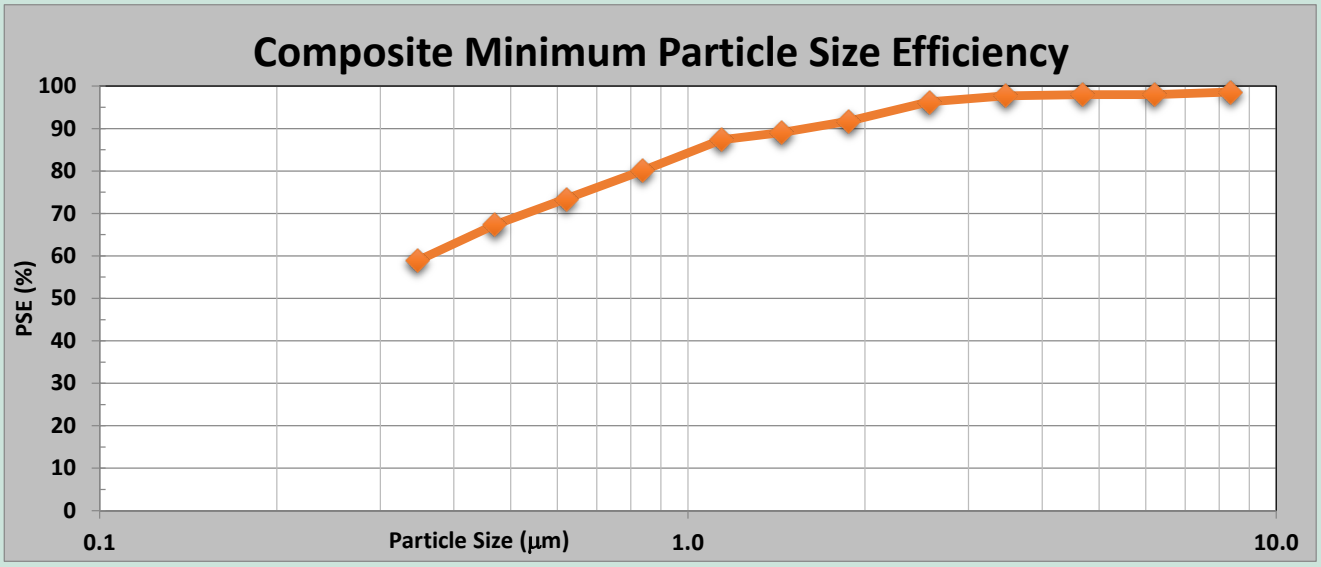
Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV11 24x24x4**	**855143-001**

Clean Resistance Table

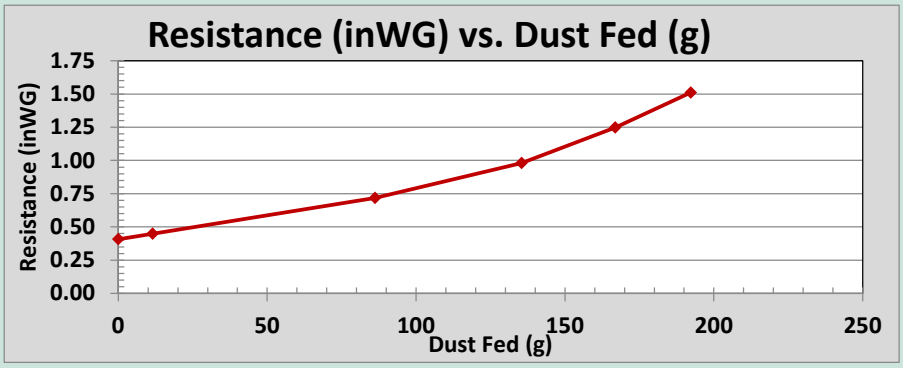
cfm	*m^3/s*	*inWG*	*Pa*
1015	0.48	0.141456	35
1502	0.71	0.252371	63
1997	0.94	0.403472	100
2495	1.18	0.585517	146

248.8454





ΔP (inWG)	Dust Fed (g)
0.41	0
0.45	11
0.72	86
0.98	135
1.25	167
1.51	192



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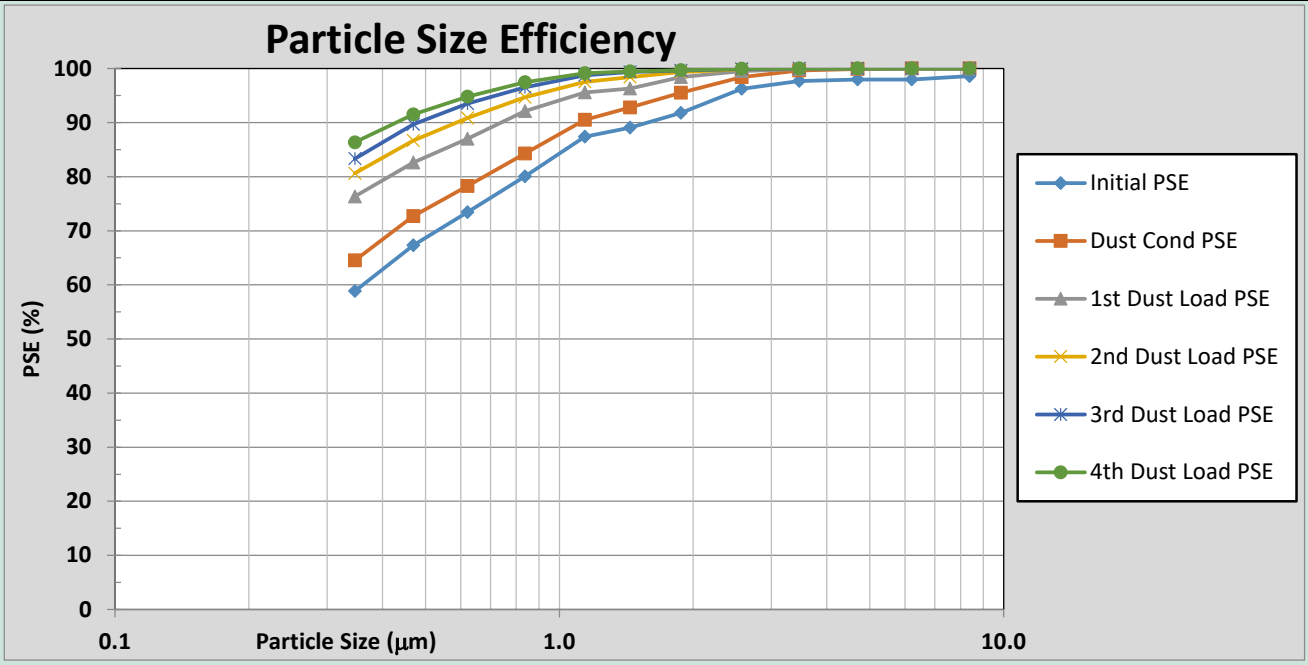
ASHRAE® 52.2-2017 Test Results

Date:	Dec 12, 2019	Test Report:	191212_1617
Manufacturer		Filter Model	Filter Part Number
Camfil USA		**OPDBMV11 24x24x4**	**855143-001**

Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**59**	**67**	**73**	**80**	**87**	**89**	**92**	**96**	**98**	**98**	**98**	**99**
Dust Cond PSE	**65**	**73**	**78**	**84**	**91**	**93**	**96**	**98**	**100**	**100**	**100**	**100**
1st Dust Load PSE	**76**	**83**	**87**	**92**	**96**	**96**	**98**	**100**	**100**	**100**	**100**	**100**
2nd Dust Load PSE	**81**	**87**	**91**	**95**	**97**	**98**	**99**	**100**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**83**	**90**	**94**	**97**	**99**	**99**	**100**	**100**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**86**	**92**	**95**	**97**	**99**	**99**	**100**	**100**	**100**	**100**	**100**	**100**
Composite Min PSE	**59**	**67**	**73**	**80**	**87**	**89**	**92**	**96**	**98**	**98**	**98**	**99**



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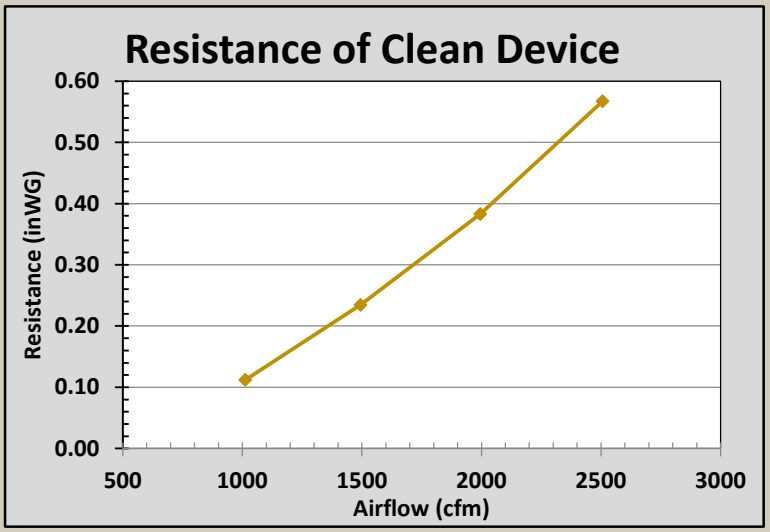
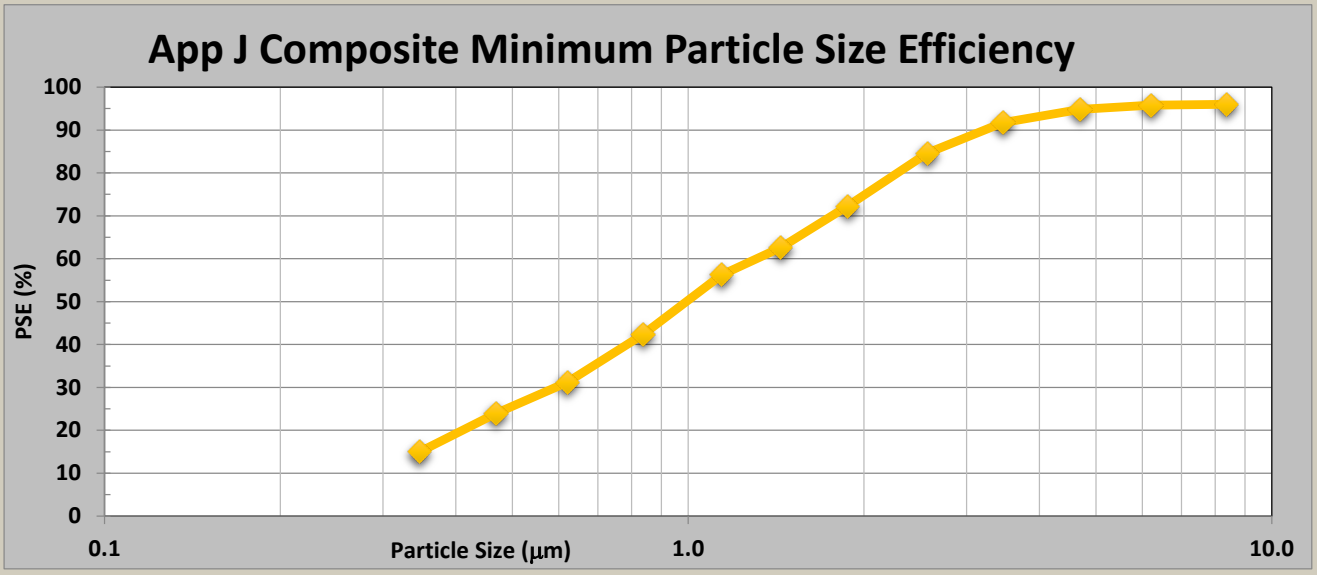
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	06/04/2020	Test Number:	200604_1727

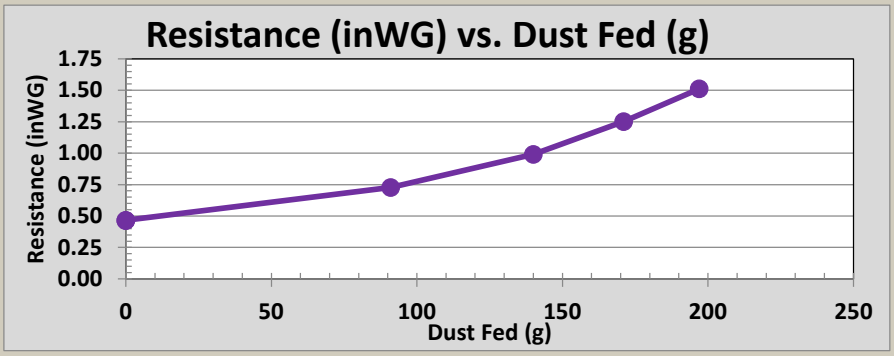
Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV11 24x24x4**	**855143-001**

Clean Resistance Table			
cfm	***m^3/s***	***inWG***	***Pa***
1013	0.48	0.11212	28
1495	0.71	0.234689	58
1995	0.94	0.382977	95
2507	1.18	0.567433	141





ΔP (inWG)	Dust Fed (g)
0.46	**0**
0.47	**0**
0.73	**91**
0.99	**140**
1.25	**171**
1.51	**197**



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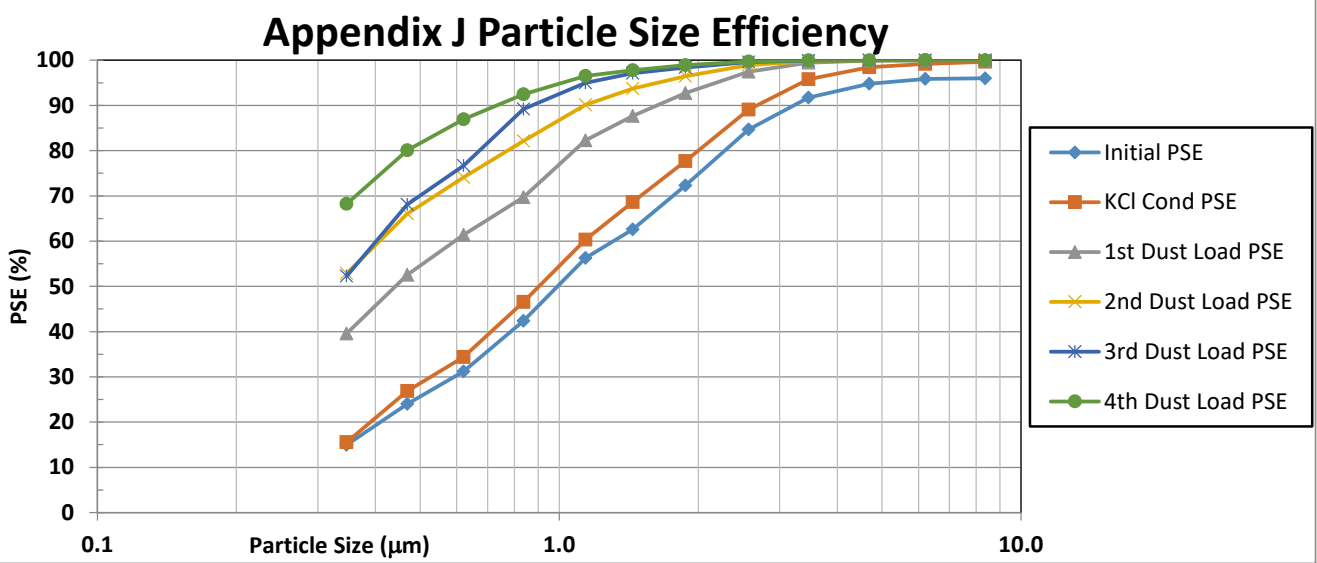
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	06/04/2020	Test Number:	200604_1727
Manufacturer		Filter Model	Filter Part Number
Camfil USA		**OPDBMV11 24x24x4**	**855143-001**

App J Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**15**	**24**	**31**	**42**	**56**	**63**	**72**	**85**	**92**	**95**	**96**	**96**
KCl Cond PSE	**16**	**27**	**34**	**47**	**60**	**69**	**78**	**89**	**96**	**98**	**99**	**100**
1st Dust Load PSE	**40**	**53**	**61**	**70**	**82**	**88**	**93**	**97**	**99**	**100**	**100**	**100**
2nd Dust Load PSE	**53**	**66**	**74**	**82**	**90**	**94**	**96**	**99**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**52**	**68**	**77**	**89**	**95**	**97**	**98**	**100**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**68**	**80**	**87**	**92**	**97**	**98**	**99**	**100**	**100**	**100**	**100**	**100**
Composite Min PSE	**15**	**24**	**31**	**42**	**56**	**63**	**72**	**85**	**92**	**95**	**96**	**96**



Bkg Concentration (particles/cm^3)	Avg Cond Aerosol Conc (particles/cm^3)	Cumulative Cond Duration (minutes)	Cumulative Cond CT (particles-min/cm^3)
2.0	**5.85E+05**	**302**	**1.77E+08**

Large Particle Concentration (Particles/cm^3)	Ratio Small to Large (>20,000)	Conditioning ΔP (inWG)		Same duct?
		Initial ΔP	Final ΔP	
26	**22,510**	**0.38**	**0.38**	**No**

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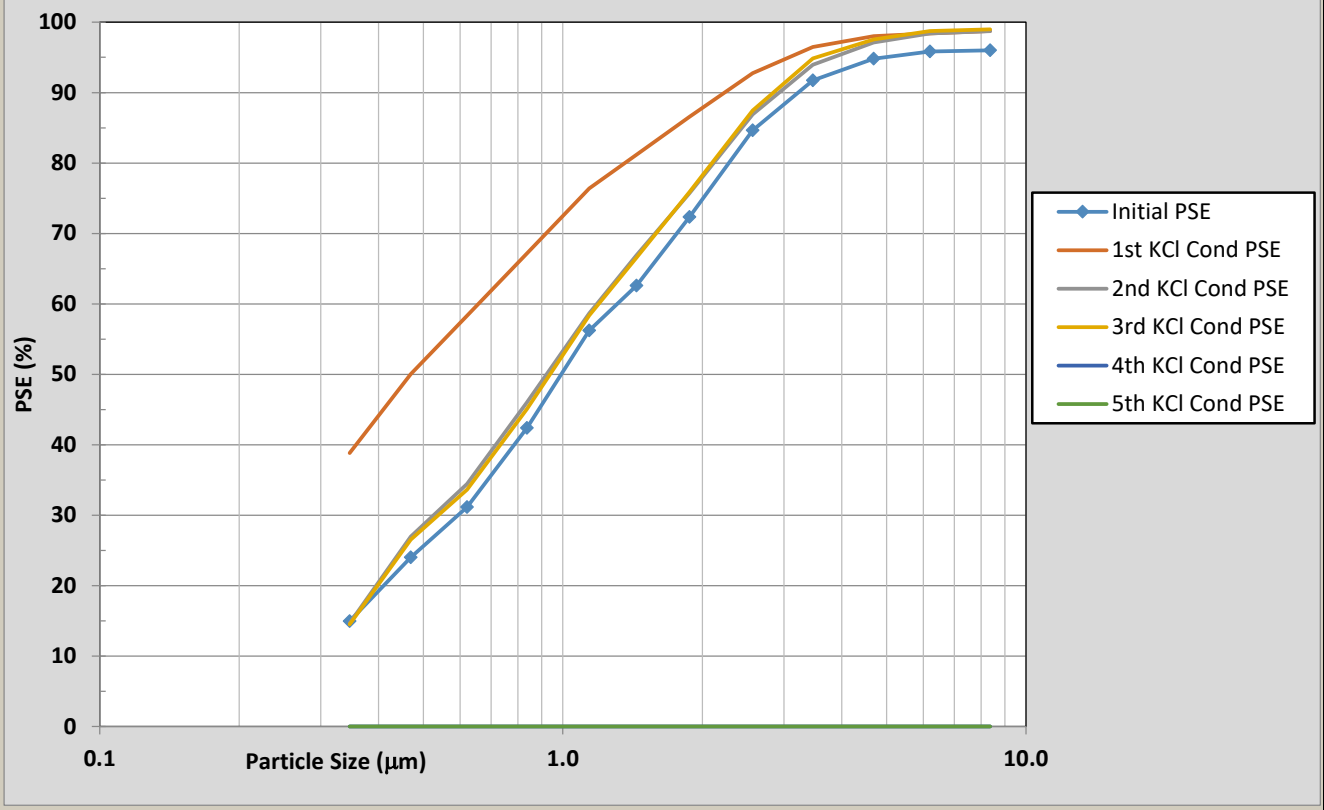
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	06/04/2020	Test Number:	200604_1727
Manufacturer		Filter Model	Filter Part Number
Camfil USA		**OPDBMV11 24x24x4**	**855143-001**

KCl Conditioning Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**15**	**24**	**31**	**42**	**56**	**63**	**72**	**85**	**92**	**95**	**96**	**96**
1st KCl Cond PSE	**39**	**50**	**58**	**67**	**76**	**81**	**87**	**93**	**96**	**98**	**98**	**99**
2nd KCl Cond PSE	**15**	**27**	**34**	**46**	**59**	**67**	**76**	**87**	**94**	**97**	**98**	**99**
3rd KCl Cond PSE	**14**	**27**	**34**	**45**	**58**	**67**	**76**	**87**	**95**	**98**	**99**	**99**
4th KCl Cond PSE												
5th KCl Cond PSE												
Final KCl Cond PSE	**14**	**27**	**34**	**45**	**58**	**67**	**76**	**87**	**95**	**98**	**99**	**99**

KCl Conditioning Particle Size Efficiency



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ASHRAE 52.2-2017 Test Results w/Appendix J Results

Filter Description

Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDMV13 24x24x2**	**855142-011**

Filter Type	Media Type	Media Color	Media Area (ft^2)
Minipleat	**Synthetic**	**White**	**54**

Nominal Size	Actual Size				
HxWxD	Hgt (in)	Wid (in)	Dep (in)	Pleats/Pockets	UL Rating
24"x24"x2"	**23 3/8**	**23 3/8**	**1 3/4**	**114**	**Yes**

ASHRAE 52.2-2017

Test Report: **200325_1721**

Time: **1:04:21** Date: **Mar 25, 2020**

Test Data	Test Results	Rated Values	
AirFlow (cfm)	**1999**	**2000**	
Nominal Vel (fpm)	**500**	**500**	
Initial ΔP (inWG)	**0.50**	**0.50**	
MERV	**13**	**13**	**@1999cfm**
E_1 (0.3-1.0μm), (%)	**67**	**≥ 50**	
E_2 (1.0-3.0μm), (%)	**91**	**≥ 85**	
E_3 (3.0-10μm), (%)	**97**	**≥ 90**	
Final DP, (inWG)	**1.0**	**1.0**	
Arrestance, (%)	**99**	**92**	
DHC, (g)	**76**		

Temp, (F)	**72**	Test Aerosol	**KCL**
RH, (%)	**49**	Loading Dust	**ASHRAE**

ASHRAE 52.2-2017 w/App J

Test Report: **200529_1654**

Time: **3:27:32** Date: **May 29, 2020**

Test Data	Test Results	Rated Values	
AirFlow (cfm)	**2006**	**2000**	
Nominal Vel (fpm)	**502**	**500**	
Initial ΔP (inWG)	**0.54**	**0.50**	
MERV-A	**12A**	**13A**	**@2006cfm**
E_1-A (0.3-1.0μm), (%)	**47**	**≥ 50**	
E_2-A (1.0-3.0μm), (%)	**85**	**≥ 85**	
E_3-A (3.0-10μm), (%)	**99**	**≥ 90**	
Final DP, (inWG)	**1.0**	**1.0**	
Arrestance-A, (%)	**99**	**92**	
DHC-A, (g)	**71**		

Temp, (F)	**77**	Test Aerosol	**KCL**
RH, (%)	**48**	Loading Dust	**ASHRAE**

Certified Test Per ASHRAE 52.2-2017

Approval: *Don Thornburg, R&D Manager*
Electronic Signature, Original on file

Operator	Particle Counter	Model
AA	**TSI**	**OPS-3330**

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ASHRAE® 52.2-2017 Test Results

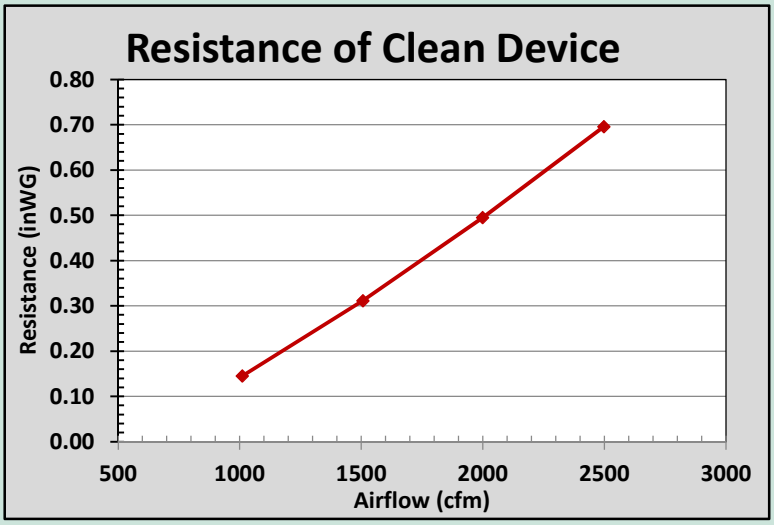
Date:	Mar 25, 2020	Test Report:	200325_1721

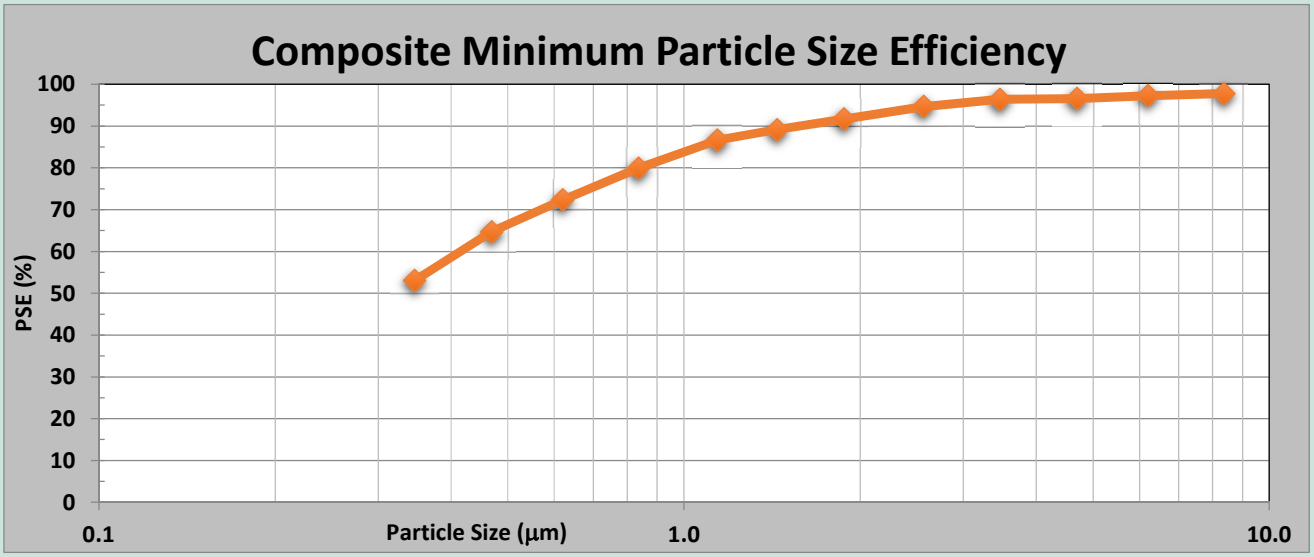
Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDMV13 24x24x2**	**855142-011**

Clean Resistance Table

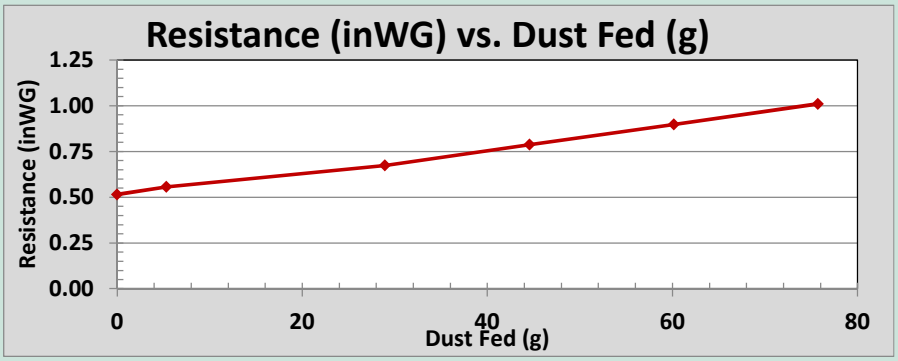
cfm	*m^3/s*	*inWG*	*Pa*
1011	0.48	0.145073	36
1506	0.71	0.311445	78
1999	0.94	0.495098	123
2497	1.18	0.69603	173

248.8454





ΔP (inWG)	Dust Fed (g)
0.51	**0**
0.56	**5**
0.67	**29**
0.79	**45**
0.90	**60**
1.01	**76**



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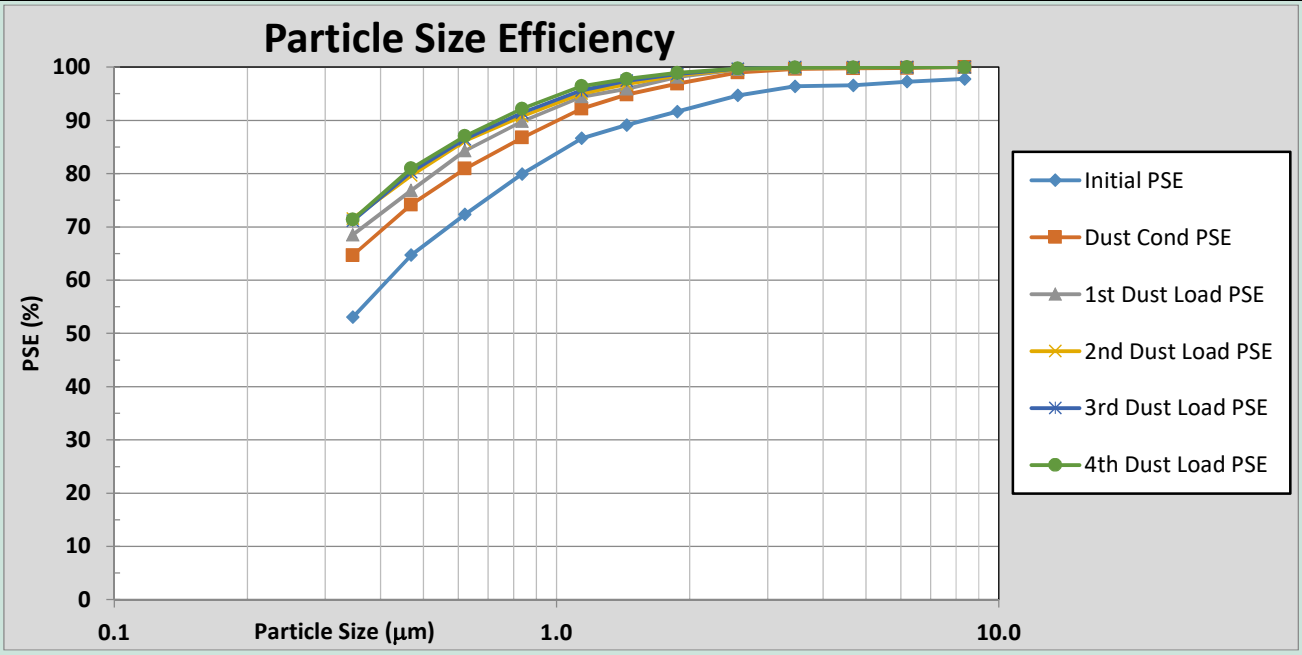
ASHRAE® 52.2-2017 Test Results

Date:	Mar 25, 2020	Test Report:	200325_1721
Manufacturer		Filter Model	Filter Part Number
Camfil USA		OPDMV13 24x24x2	855142-011

Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**53**	**65**	**72**	**80**	**87**	**89**	**92**	**95**	**96**	**97**	**97**	**98**
Dust Cond PSE	**65**	**74**	**81**	**87**	**92**	**95**	**97**	**99**	**100**	**100**	**100**	**100**
1st Dust Load PSE	**69**	**77**	**84**	**90**	**94**	**96**	**98**	**100**	**100**	**100**	**100**	**100**
2nd Dust Load PSE	**72**	**80**	**86**	**91**	**95**	**97**	**98**	**100**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**71**	**80**	**86**	**91**	**96**	**97**	**99**	**100**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**71**	**81**	**87**	**92**	**96**	**98**	**99**	**100**	**100**	**100**	**100**	**100**
Composite Min PSE	**53**	**65**	**72**	**80**	**87**	**89**	**92**	**95**	**96**	**97**	**97**	**98**



All testing is performed in compliance with the latest revision of ASHRAE Standard 52.2 in a state-of-the-art laboratory facility located at the Camfil USA headquarters in Riverdale, NJ. Test Reports without DHC values show efficiency only and the associated MERV value is a estimated value based on the single efficiency data shown. For more information, contact your local Camfil representative or distributor.

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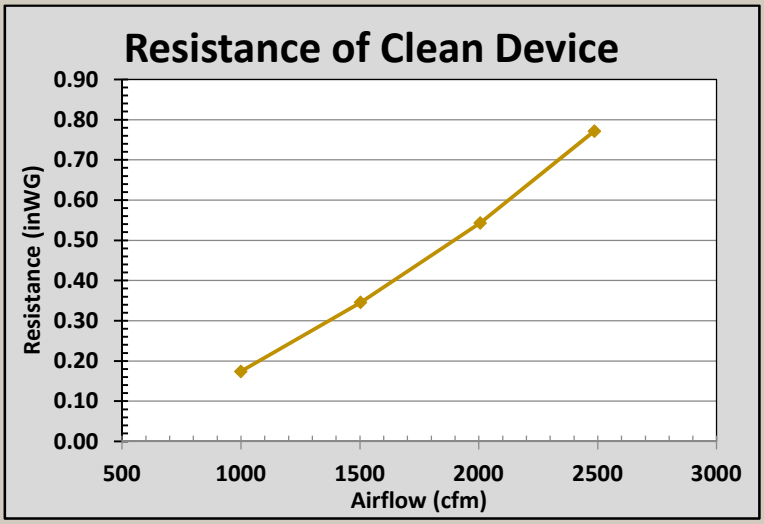
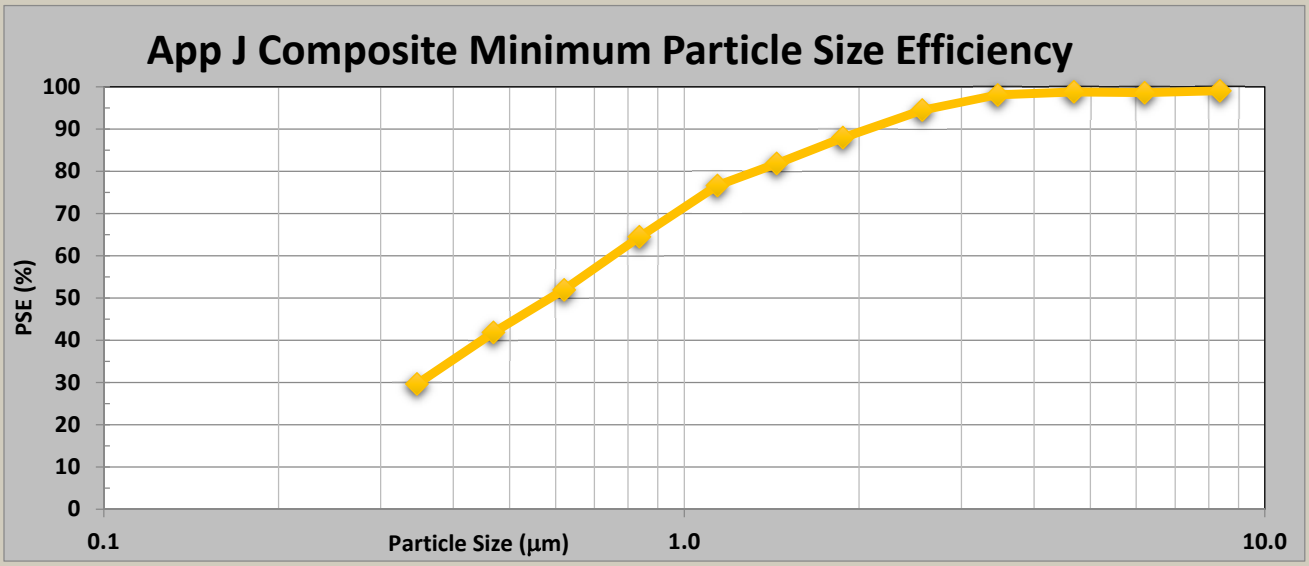
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	05/29/2020	Test Number:	200529_1654

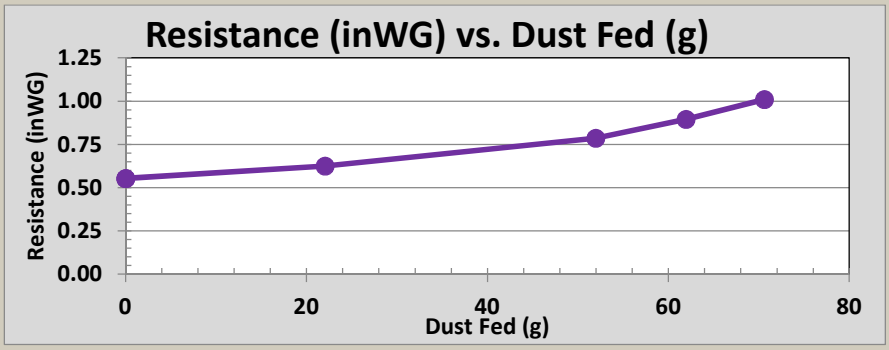
Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDMV13 24x24x2**	**855142-011**

Clean Resistance Table			
cfm	*m^3/s*	*inWG*	*Pa*
1000	0.47	0.174409	43
1503	0.71	0.345604	86
2006	0.95	0.543321	135
2486	1.17	0.771983	192





ΔP (inWG)	Dust Fed (g)
0.55	**0**
0.55	**0**
0.62	**22**
0.79	**52**
0.89	**62**
1.01	**71**



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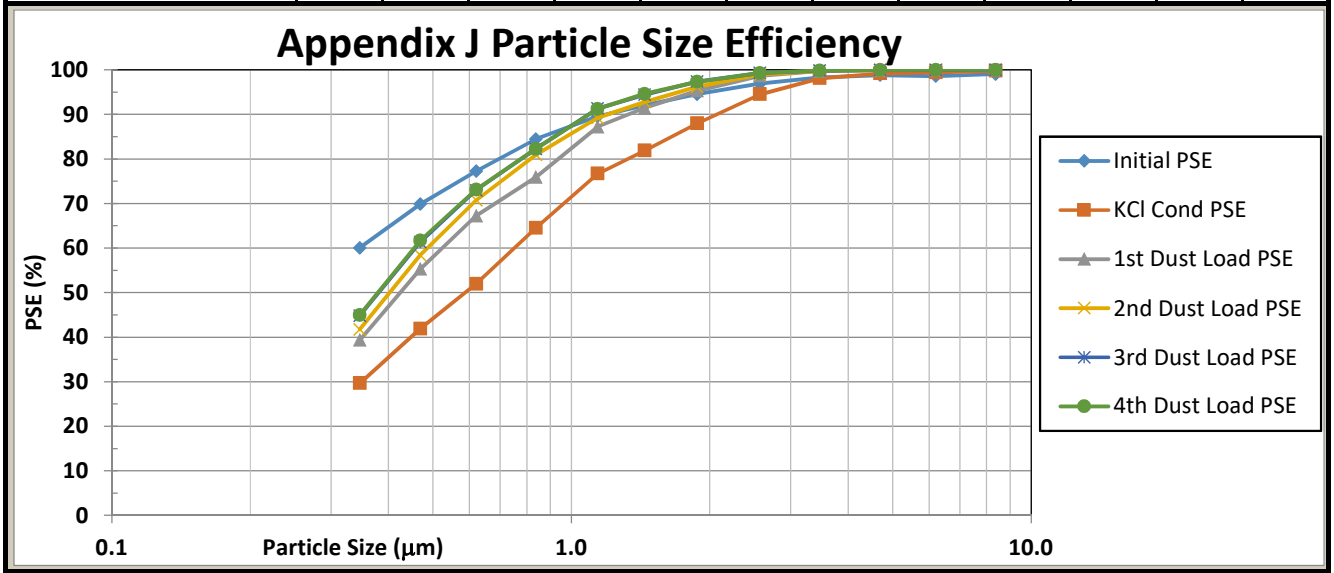
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	05/29/2020	Test Number:	200529_1654
Manufacturer		Filter Model	Filter Part Number
Camfil USA		OPDMV13 24x24x2	855142-011

App J Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**60**	**70**	**77**	**84**	**90**	**92**	**95**	**97**	**98**	**99**	**99**	**99**
KCl Cond PSE	**30**	**42**	**52**	**64**	**77**	**82**	**88**	**94**	**98**	**99**	**99**	**100**
1st Dust Load PSE	**39**	**55**	**67**	**76**	**87**	**91**	**95**	**99**	**100**	**100**	**100**	**100**
2nd Dust Load PSE	**42**	**58**	**71**	**81**	**89**	**93**	**96**	**99**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**45**	**61**	**73**	**82**	**91**	**94**	**97**	**99**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**45**	**62**	**73**	**82**	**91**	**95**	**97**	**99**	**100**	**100**	**100**	**100**
Composite Min PSE	**30**	**42**	**52**	**64**	**77**	**82**	**88**	**94**	**98**	**99**	**99**	**99**



Bkg Concentration (particles/cm^3)	Avg Cond Aerosol Conc (particles/cm^3)	Cumulative Cond Duration (minutes)	Cumulative Cond CT (particles-min/cm^3)
2.0	**8.15E+05**	**420**	**3.42E+08**

Large Particle Concentration (Particles/cm^3)	Ratio Small to Large (>20,000)	Conditioning ΔP (inWG)		Same duct?
		Initial ΔP	Final ΔP	
25	**32,600**	**0.53**	**0.54**	**No**

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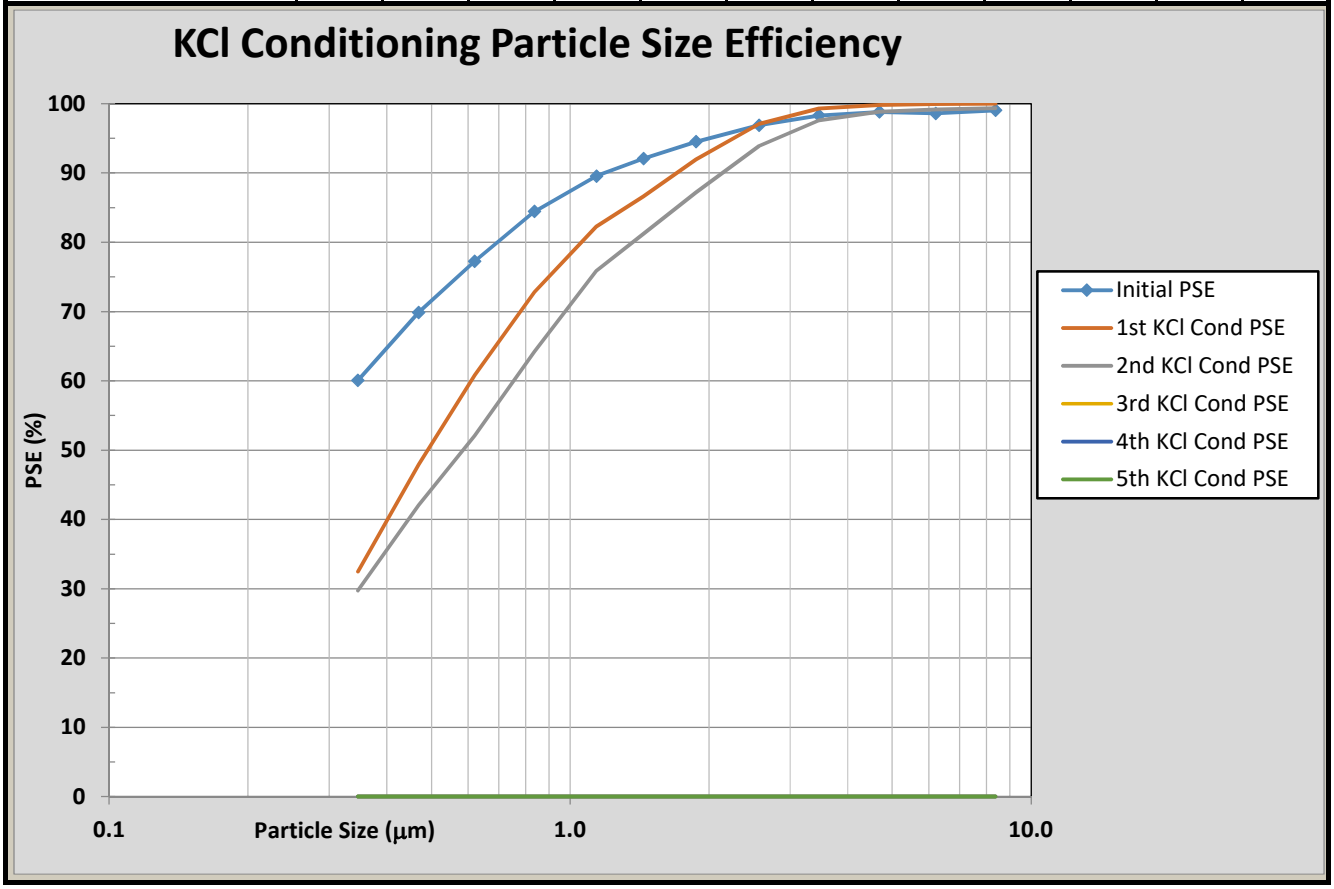
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	05/29/2020	Test Number:	200529_1654
Manufacturer		Filter Model	Filter Part Number
Camfil USA		OPDMV13 24x24x2	855142-011

KCl Conditioning Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**60**	**70**	**77**	**84**	**90**	**92**	**95**	**97**	**98**	**99**	**99**	**99**
1st KCl Cond PSE	**32**	**48**	**61**	**73**	**82**	**87**	**92**	**97**	**99**	**100**	**100**	**100**
2nd KCl Cond PSE	**30**	**42**	**52**	**64**	**76**	**81**	**87**	**94**	**98**	**99**	**99**	**99**
3rd KCl Cond PSE												
4th KCl Cond PSE												
5th KCl Cond PSE												
Final KCl Cond PSE	**30**	**42**	**52**	**64**	**76**	**81**	**87**	**94**	**98**	**99**	**99**	**99**



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ASHRAE 52.2-2017 Test Results w/Appendix J Results

Filter Description

Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV13 24x24x4**	**855143-011**

Filter Type	Media Type	Media Color	Media Area (ft^2)
Mini pleat	**Synthetic**	**White**	**77**

Nominal Size	Actual Size				
HxWxD	Hgt (in)	Wid (in)	Dep (in)	Pleats/Pockets	UL Rating
24"x24"x4"	**23 3/8**	**23 3/8**	**3 3/4**	**69**	**Yes**

ASHRAE 52.2-2017

Test Report:	200221_1718		
Time:	11:54:57	Date:	Feb 21, 2020

Test Data	Test Results	Rated Values	
AirFlow (cfm)	2002	2000	
Nominal Vel (fpm)	501	500	
Initial ΔP (inWG)	0.48	0.46	
MERV	13	13	@2002cfm
E_1 (0.3-1.0μm), (%)	71	≥ 50	
E_2 (1.0-3.0μm), (%)	92	≥ 85	
E_3 (3.0-10μm), (%)	98	≥ 90	
Final DP, (inWG)	1.5	1.0	
Arrestance, (%)	99	98	
DHC, (g)	162		

Temp, (F)	73	Test Aerosol	KCL
RH, (%)	24	Loading Dust	ASHRAE

ASHRAE 52.2-2017 w/App J

Test Report:	200528_1722		
Time:	11:40:39	Date:	May 28, 2020

Test Data	Test Results	Rated Values	
AirFlow (cfm)	2000	2000	
Nominal Vel (fpm)	500	500	
Initial ΔP (inWG)	0.52	0.46	
MERV-A	13A	13A	@2000cfm
E_1-A (0.3-1.0μm), (%)	54	≥ 50	
E_2-A (1.0-3.0μm), (%)	89	≥ 85	
E_3-A (3.0-10μm), (%)	98	≥ 90	
Final DP, (inWG)	1.5	1.0	
Arrestance-A, (%)	99	95	
DHC-A, (g)	157		

Temp, (F)	74	Test Aerosol	KCL
RH, (%)	50	Loading Dust	ASHRAE

Certified Test Per ASHRAE 52.2-2017

Approval:	*Don Thornburg, R&D Manager* Electronic Signature, Original on file

Operator	Particle Counter	Model
EO	TSI	OPS-3330

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ASHRAE® 52.2-2017 Test Results

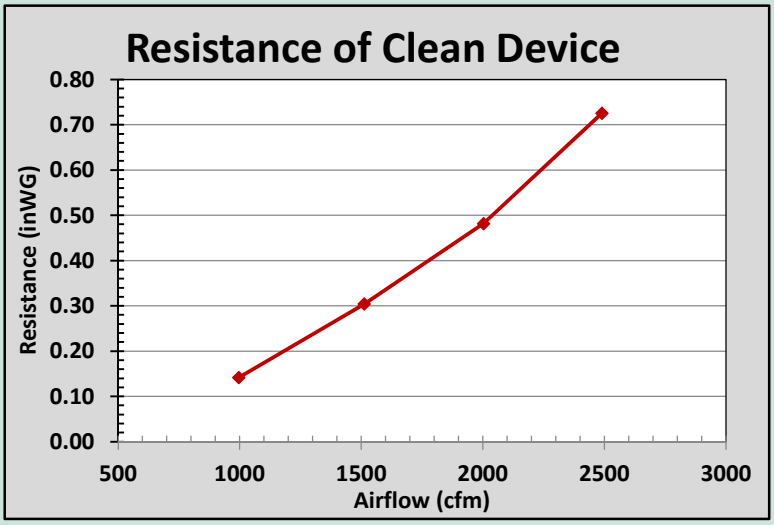
Date:	Feb 21, 2020	Test Report:	200221_1718

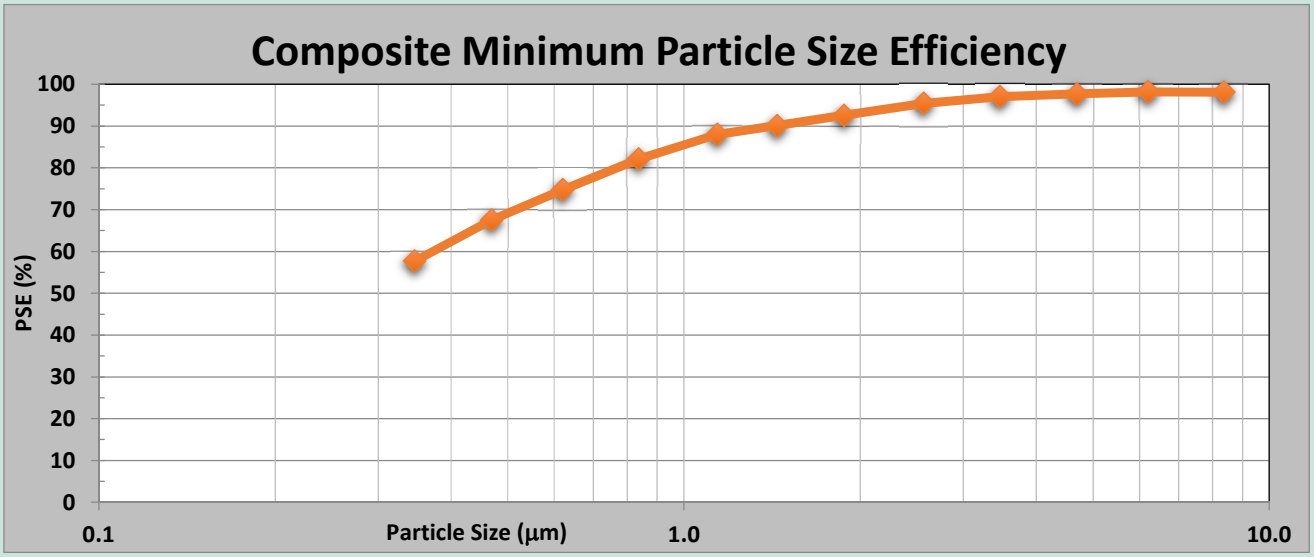
Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV13 24x24x4**	**855143-011**

Clean Resistance Table

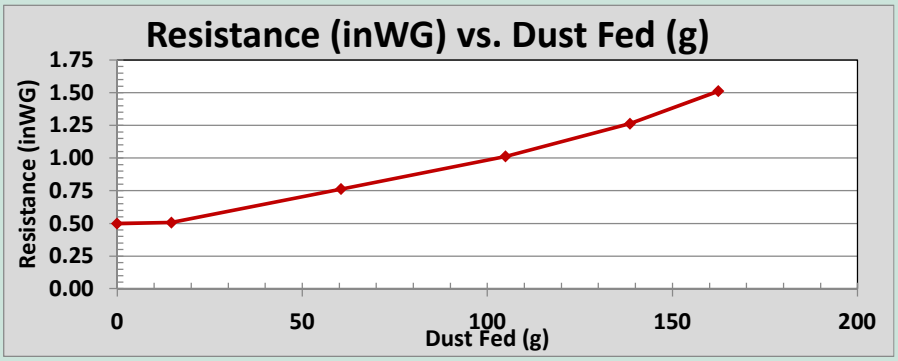
cfm	*m^3/s*	*inWG*	*Pa*
996	0.47	0.141858	35
1512	0.71	0.30381	76
2002	0.94	0.481434	120
2489	1.17	0.725366	181

248.8454





ΔP (inWG)	Dust Fed (g)
0.50	**0**
0.51	**15**
0.76	**60**
1.01	**105**
1.26	**139**
1.51	**162**



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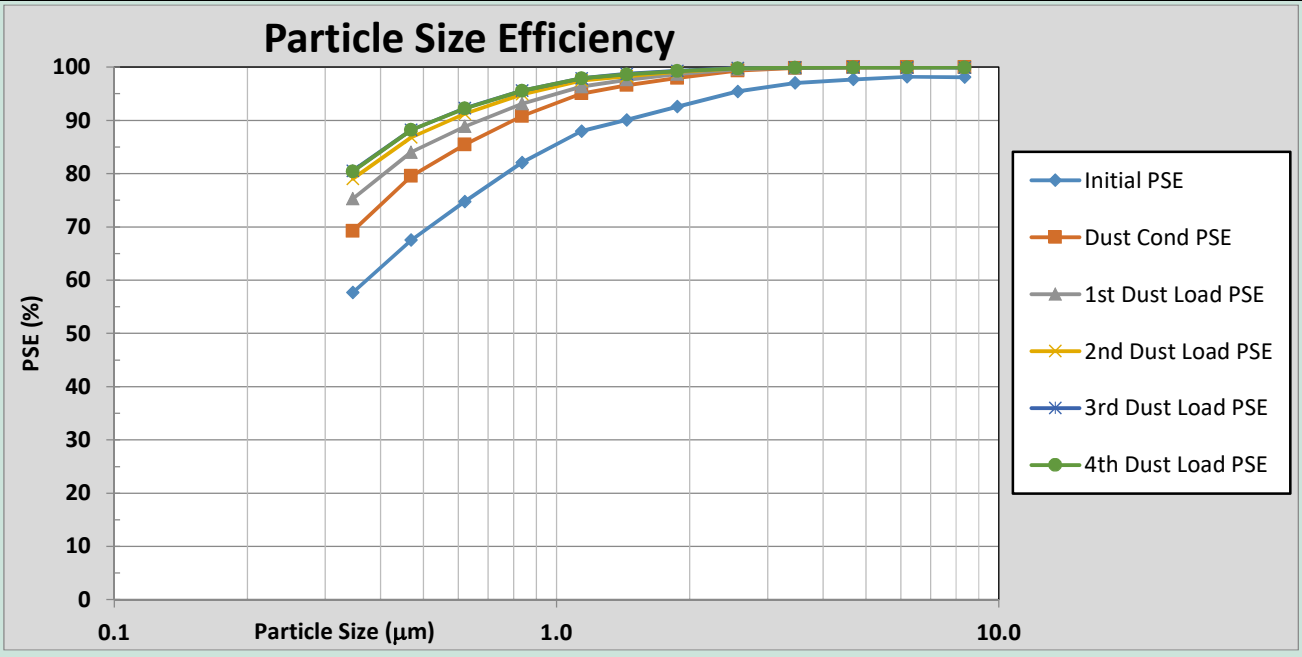
ASHRAE® 52.2-2017 Test Results

Date:	Feb 21, 2020	Test Report:	200221_1718
Manufacturer		Filter Model	Filter Part Number
Camfil USA		OPDBMV13 24x24x4	855143-011

Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**58**	**68**	**75**	**82**	**88**	**90**	**93**	**95**	**97**	**98**	**98**	**98**
Dust Cond PSE	**69**	**80**	**85**	**91**	**95**	**97**	**98**	**99**	**100**	**100**	**100**	**100**
1st Dust Load PSE	**75**	**84**	**89**	**93**	**96**	**98**	**99**	**100**	**100**	**100**	**100**	**100**
2nd Dust Load PSE	**79**	**87**	**91**	**95**	**98**	**98**	**99**	**100**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**81**	**88**	**92**	**96**	**98**	**99**	**99**	**100**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**80**	**88**	**92**	**96**	**98**	**99**	**99**	**100**	**100**	**100**	**100**	**100**
Composite Min PSE	**58**	**68**	**75**	**82**	**88**	**90**	**93**	**95**	**97**	**98**	**98**	**98**



All testing is performed in compliance with the latest revision of ASHRAE Standard 52.2 in a state-of-the-art laboratory facility located at the Camfil USA headquarters in Riverdale, NJ. Test Reports without DHC values show efficiency only and the associated MERV value is a estimated value based on the single efficiency data shown. For more information, contact your local Camfil representative or distributor.

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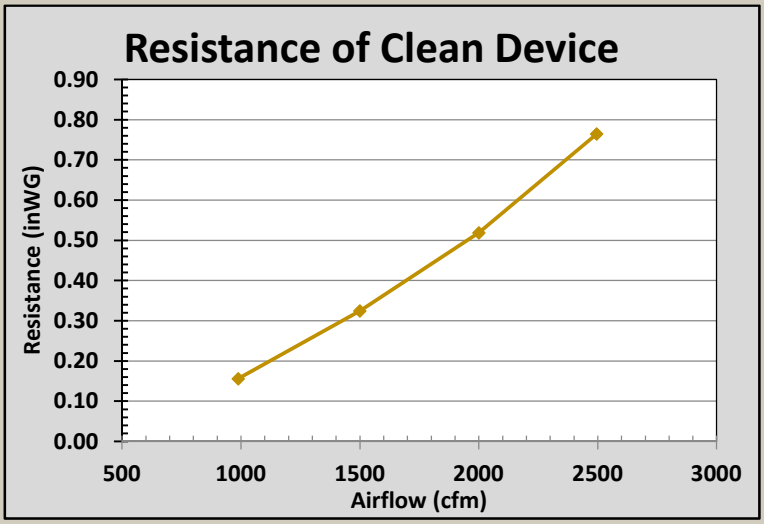
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

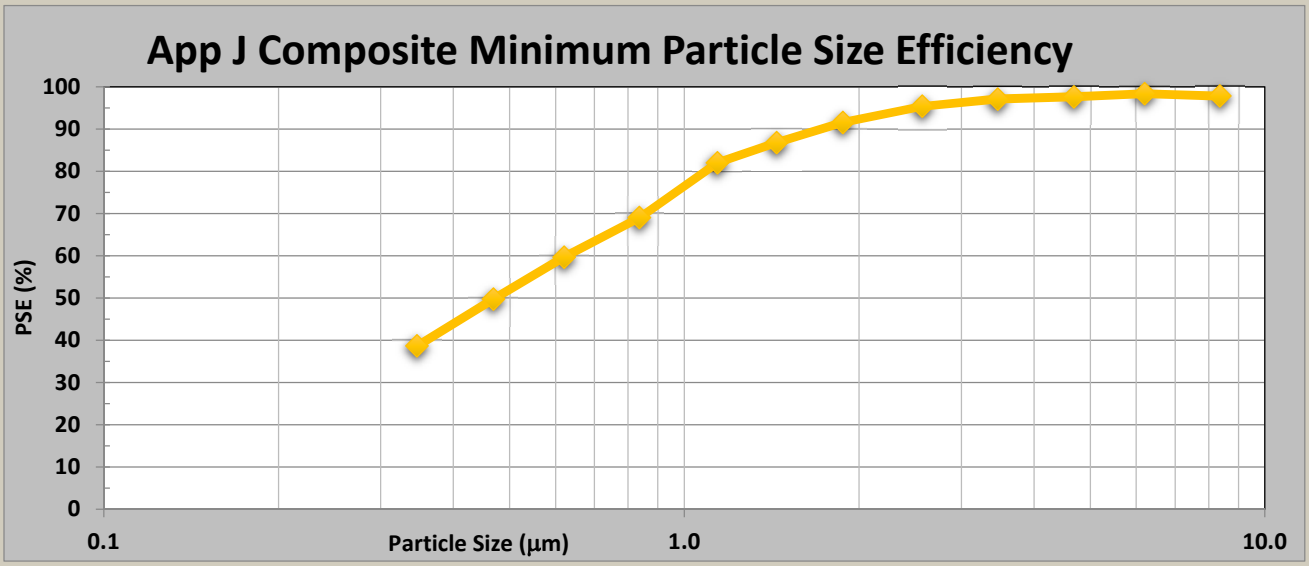
Date:	05/28/2020	Test Number:	200528_1722

Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV13 24x24x4**	**855143-011**

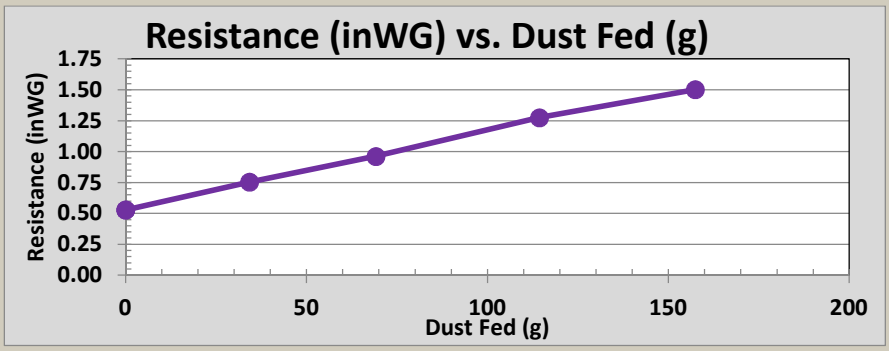
Clean Resistance Table

cfm	*m^3/s*	*inWG*	*Pa*
988	0.47	0.155924	39
1500	0.71	0.324707	81
2000	0.94	0.518808	129
2496	1.18	0.764347	190





ΔP (inWG)	Dust Fed (g)
0.53	0
0.53	0
0.75	34
0.96	69
1.27	114
1.50	157



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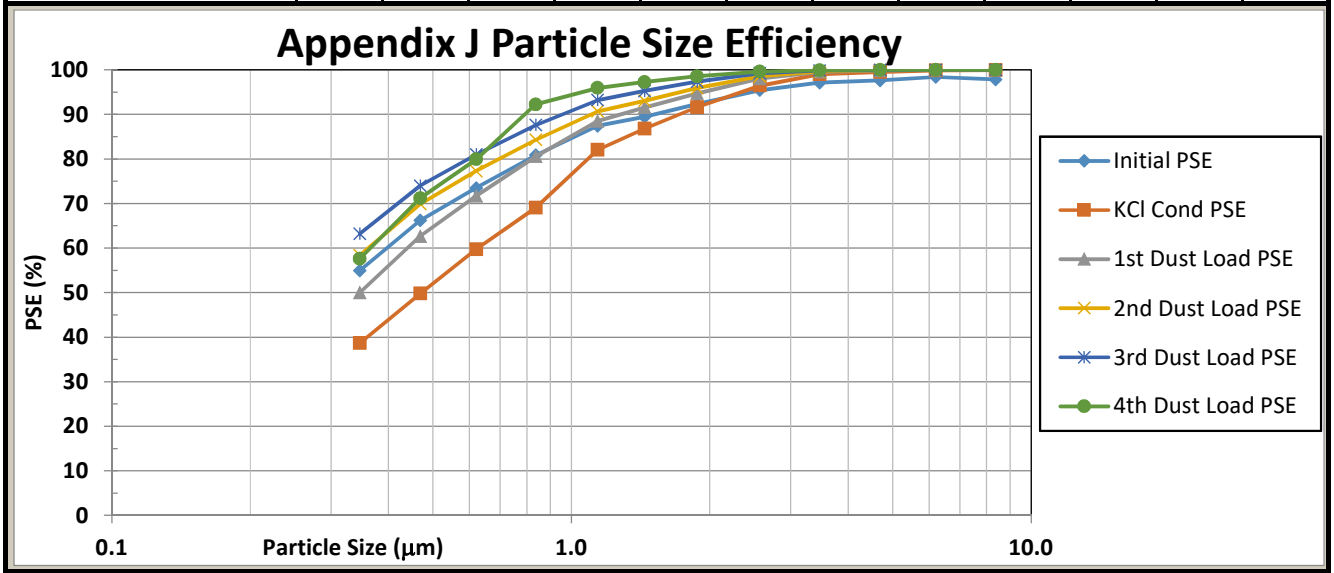
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	05/28/2020	Test Number:	200528_1722
Manufacturer		Filter Model	Filter Part Number
Camfil USA		OPDBMV13 24x24x4	855143-011

App J Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**55**	**66**	**73**	**81**	**87**	**89**	**92**	**95**	**97**	**98**	**98**	**98**
KCl Cond PSE	**39**	**50**	**60**	**69**	**82**	**87**	**92**	**96**	**99**	**99**	**100**	**100**
1st Dust Load PSE	**50**	**63**	**72**	**81**	**88**	**92**	**95**	**98**	**100**	**100**	**100**	**100**
2nd Dust Load PSE	**58**	**70**	**77**	**84**	**91**	**93**	**96**	**99**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**63**	**74**	**81**	**88**	**93**	**95**	**97**	**99**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**58**	**71**	**80**	**92**	**96**	**97**	**99**	**100**	**100**	**100**	**100**	**100**
Composite Min PSE	**39**	**50**	**60**	**69**	**82**	**87**	**92**	**95**	**97**	**98**	**98**	**98**



Bkg Concentration (particles/cm^3)	Avg Cond Aerosol Conc (particles/cm^3)	Cumulative Cond Duration (minutes)	Cumulative Cond CT (particles-min/cm^3)
2.0	**8.01E+05**	**632**	**5.06E+08**

Large Particle Concentration (Particles/cm^3)	Ratio Small to Large (>20,000)	Conditioning ΔP (inWG)		Same duct?
		Initial ΔP	Final ΔP	
11	**75,566**	**0.51**	**0.51**	**no**

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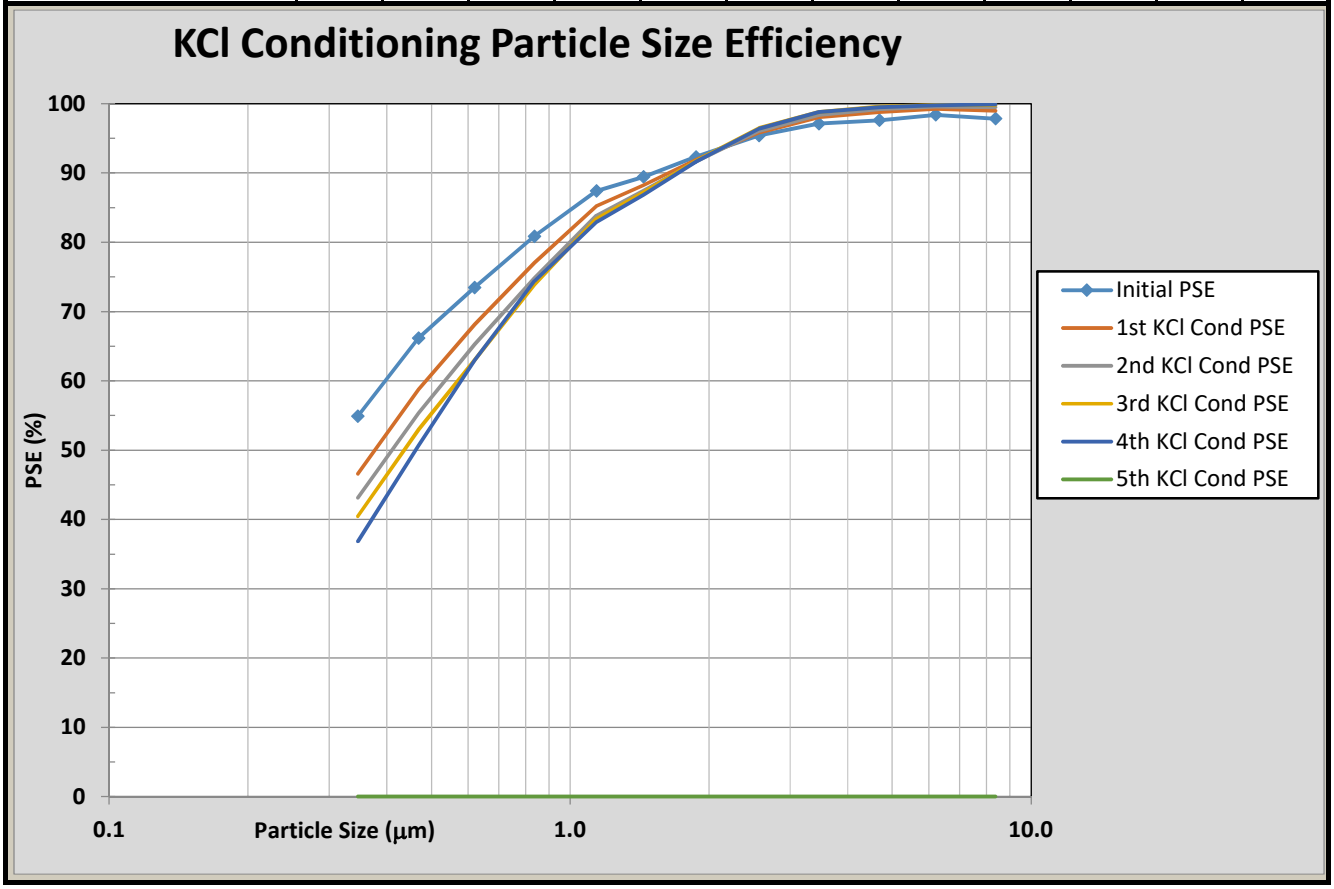
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	05/28/2020	Test Number:	200528_1722
Manufacturer		Filter Model	Filter Part Number
Camfil USA		OPDBMV13 24x24x4	855143-011

KCl Conditioning Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**55**	**66**	**73**	**81**	**87**	**89**	**92**	**95**	**97**	**98**	**98**	**98**
1st KCl Cond PSE	**47**	**59**	**68**	**77**	**85**	**88**	**92**	**96**	**98**	**99**	**99**	**99**
2nd KCl Cond PSE	**43**	**55**	**65**	**75**	**84**	**87**	**92**	**96**	**98**	**99**	**100**	**99**
3rd KCl Cond PSE	**40**	**53**	**63**	**74**	**83**	**87**	**92**	**96**	**99**	**100**	**100**	**100**
4th KCl Cond PSE	**37**	**51**	**63**	**74**	**83**	**87**	**92**	**96**	**99**	**100**	**100**	**100**
5th KCl Cond PSE												
Final KCl Cond PSE	**37**	**51**	**63**	**74**	**83**	**87**	**92**	**96**	**99**	**100**	**100**	**100**



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ASHRAE 52.2-2017 Test Results w/Appendix J Results

Filter Description

Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDMV15 24x24x2**	**855142031**

Filter Type	Media Type	Media Color	Media Area (ft^2)
Mini pleat	**Synthetic**	**White**	**54**

Nominal Size	Actual Size				
HxWxD	Hgt (in)	Wid (in)	Dep (in)	Pleats/Pockets	UL Rating
24"x24"x4"	**23 3/8**	**23 3/8**	**1 3/4**	**114**	**Yes**

ASHRAE 52.2-2017

Test Report: **200324_1725**

Time: **10:58:00** Date: **Mar 24, 2020**

Test Data	Test Results	Rated Values	
AirFlow (cfm)	**2004**	**2000**	
Nominal Vel (fpm)	**501**	**500**	
Initial ΔP (inWG)	**0.53**	**0.60**	
MERV	**15**	**15**	**@2004cfm**
E_1 (0.3-1.0μm), (%)	**86**	**≥ 85**	
E_2 (1.0-3.0μm), (%)	**97**	**≥ 90**	
E_3 (3.0-10μm), (%)	**100**	**≥ 95**	
Final DP, (inWG)	**1.0**	**1.0**	
Arrestance, (%)	**99**	**95**	
DHC, (g)	**51**		

Temp, (F): **72** Test Aerosol: **KCL**

RH, (%): **48** Loading Dust: **ASHRAE**

ASHRAE 52.2-2017 w/App J

Test Report: **200326_1765**

Time: **10:54:10** Date: **Mar 26, 2020**

Test Data	Test Results	Rated Values	
AirFlow (cfm)	**2010**	**2000**	
Nominal Vel (fpm)	**503**	**500**	
Initial ΔP (inWG)	**0.55**	**0.60**	
MERV-A	**14A**	**15A**	**@2010cfm**
E_1-A (0.3-1.0μm), (%)	**76**	**≥ 85**	
E_2-A (1.0-3.0μm), (%)	**95**	**≥ 90**	
E_3-A (3.0-10μm), (%)	**99**	**≥ 95**	
Final DP, (inWG)	**1.0**	**1.0**	
Arrestance-A, (%)	**99**	**98**	
DHC-A, (g)	**64**		

Temp, (F): **72** Test Aerosol: **KCL**

RH, (%): **49** Loading Dust: **ASHRAE**

Certified Test Per ASHRAE 52.2-2017

Approval: *Don Thornburg, R&D Manager*
Electronic Signature, Original on file

Operator	Particle Counter	Model
AA	**TSI**	**OPS-3330**

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ASHRAE® 52.2-2017 Test Results

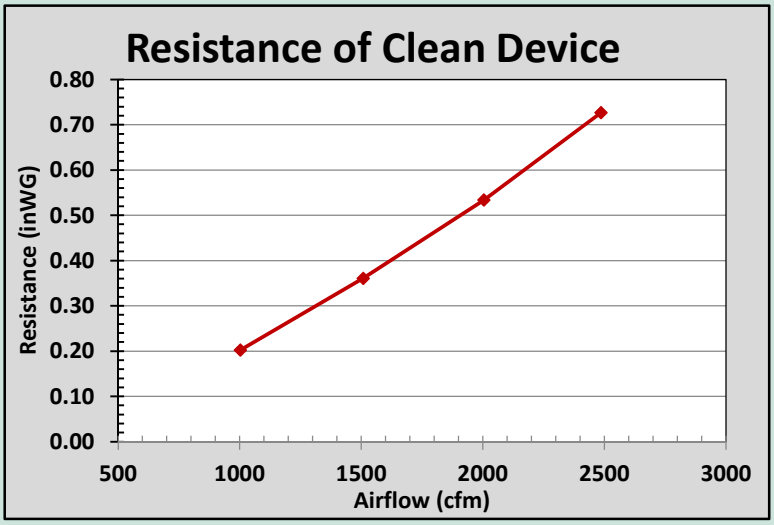
Date:	Mar 24, 2020	Test Report:	200324_1725

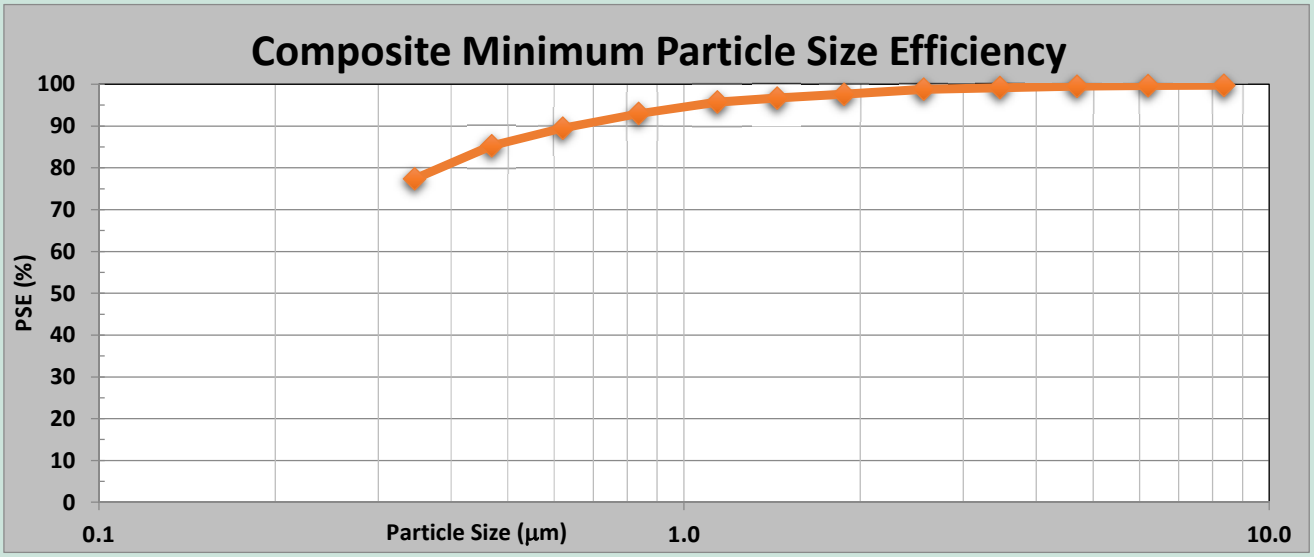
Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDMV15 24x24x2**	**855142031**

Clean Resistance Table

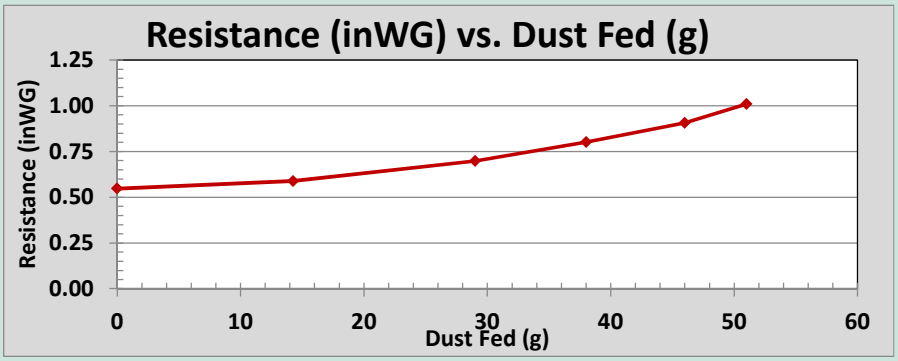
cfm	*m^3/s*	*inWG*	*Pa*
1003	0.47	0.20254	50
1508	0.71	0.360875	90
2004	0.95	0.533677	133
2485	1.17	0.726974	181

248.8454





ΔP (inWG)	Dust Fed (g)
0.55	**0**
0.59	**14**
0.70	**29**
0.80	**38**
0.90	**46**
1.01	**51**



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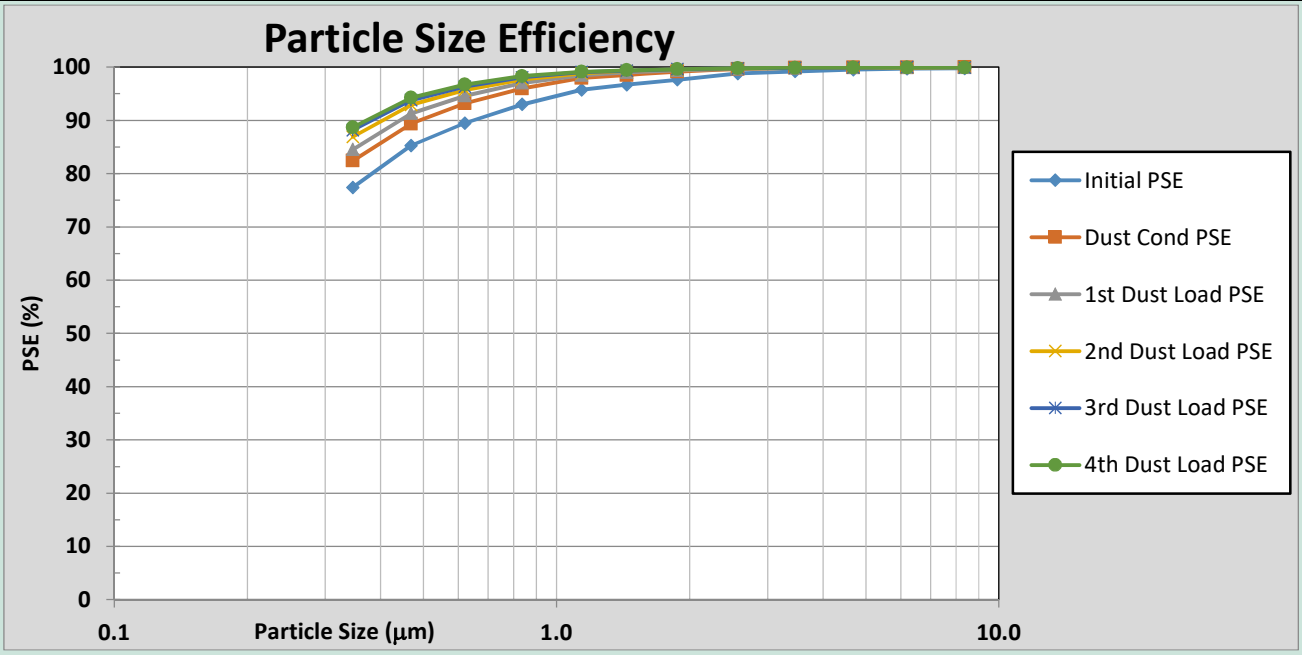
ASHRAE® 52.2-2017 Test Results

Date:	Mar 24, 2020	Test Report:	200324_1725
Manufacturer		Filter Model	Filter Part Number
Camfil USA		OPDMV15 24x24x2	855142031

Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**77**	**85**	**89**	**93**	**96**	**97**	**98**	**99**	**99**	**100**	**100**	**100**
Dust Cond PSE	**82**	**89**	**93**	**96**	**98**	**99**	**99**	**100**	**100**	**100**	**100**	**100**
1st Dust Load PSE	**85**	**91**	**95**	**97**	**98**	**99**	**99**	**100**	**100**	**100**	**100**	**100**
2nd Dust Load PSE	**87**	**93**	**96**	**98**	**99**	**99**	**100**	**100**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**88**	**94**	**96**	**98**	**99**	**99**	**100**	**100**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**89**	**94**	**97**	**98**	**99**	**99**	**100**	**100**	**100**	**100**	**100**	**100**
Composite Min PSE	**77**	**85**	**89**	**93**	**96**	**97**	**98**	**99**	**99**	**100**	**100**	**100**



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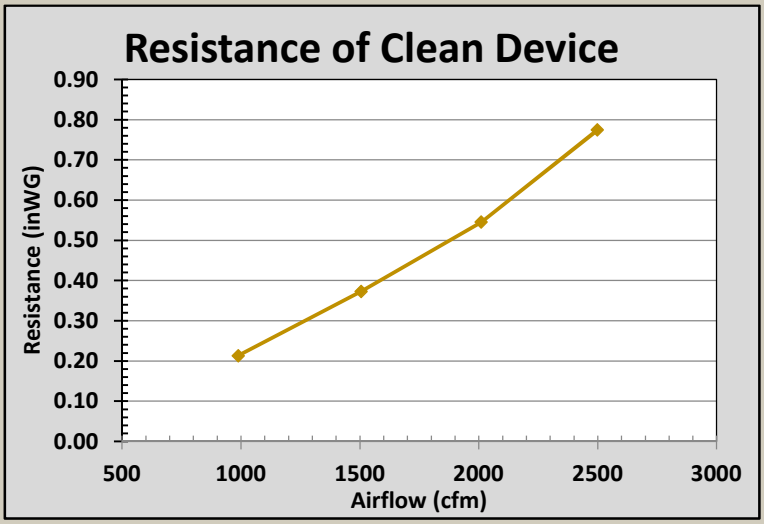
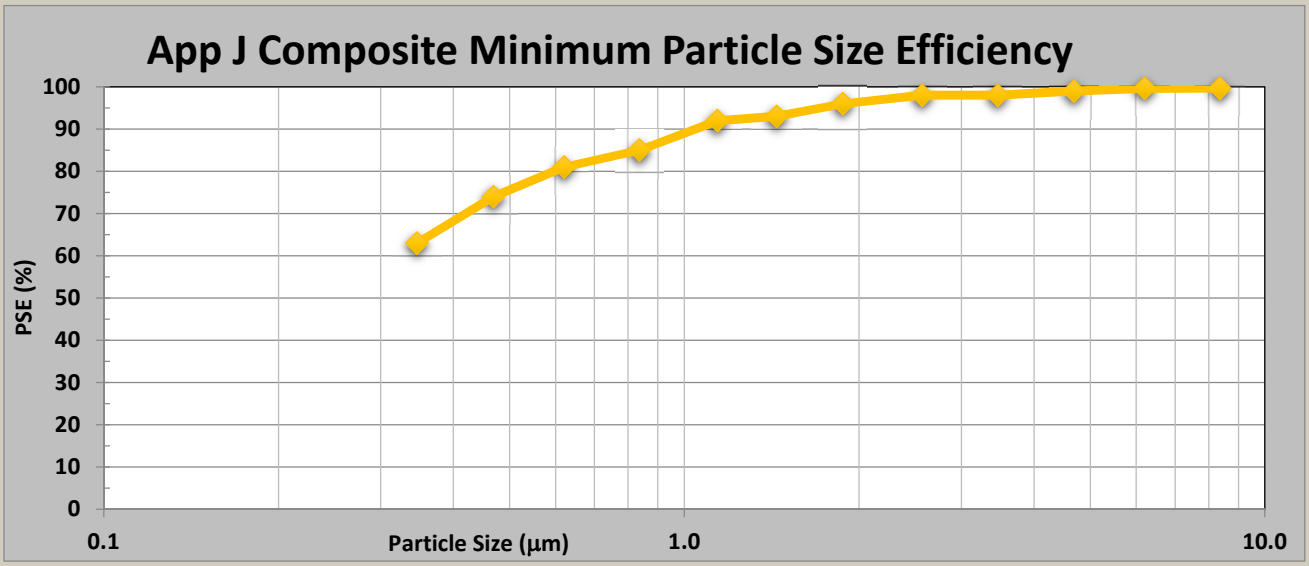
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	03/26/2020	Test Number:	200326_1765

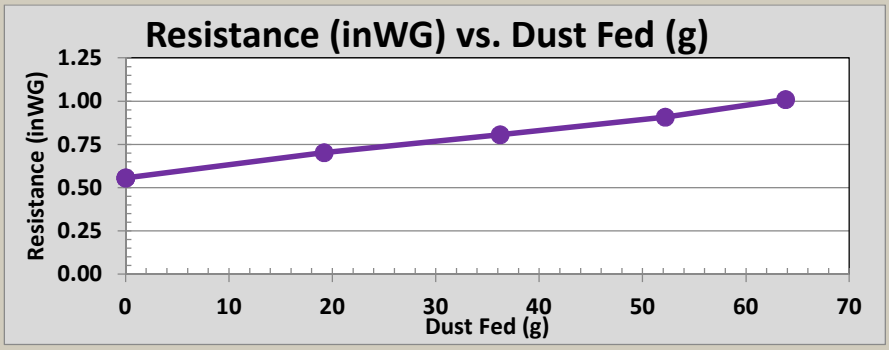
Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDMV15 24x24x2**	**855142031**

Clean Resistance Table			
cfm	*m^3/s*	*inWG*	*Pa*
988	0.47	0.21339	53
1506	0.71	0.373333	93
2010	0.95	0.545331	136
2499	1.18	0.774394	193





ΔP (inWG)	Dust Fed (g)
0.56	**0**
0.56	**0**
0.70	**19**
0.81	**36**
0.91	**52**
1.01	**64**



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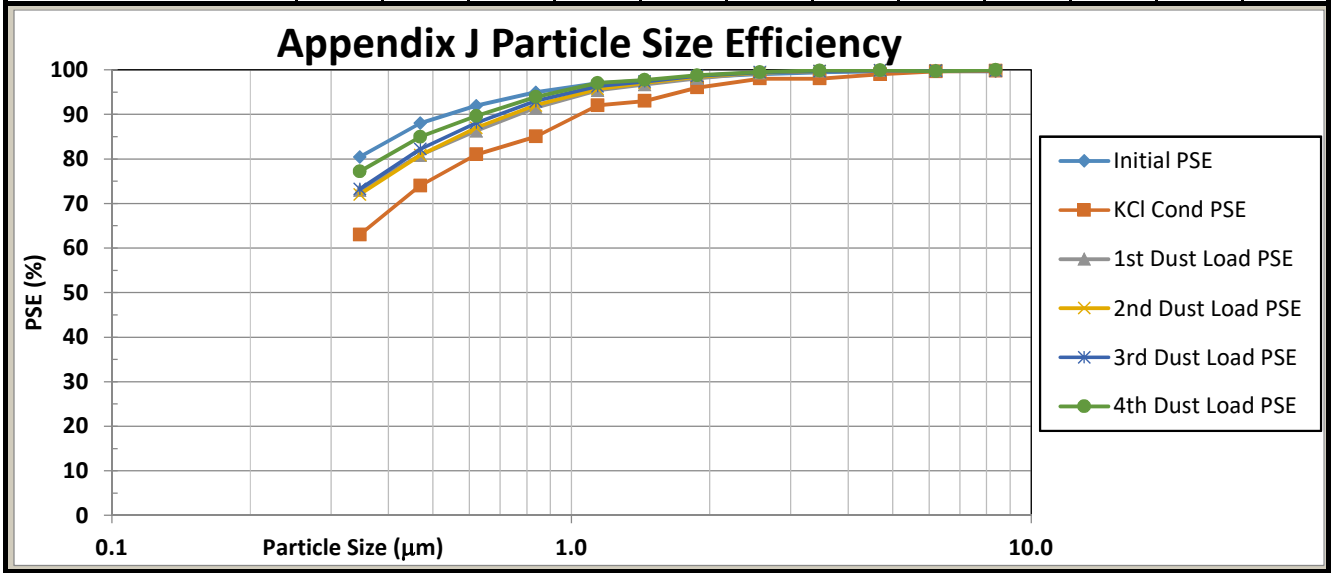
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	03/26/2020	Test Number:	200326_1765
Manufacturer		Filter Model	Filter Part Number
Camfil USA		OPDMV15 24x24x2	855142031

App J Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**80**	**88**	**92**	**95**	**97**	**98**	**98**	**99**	**99**	**100**	**100**	**100**
KCl Cond PSE	**63**	**74**	**81**	**85**	**92**	**93**	**96**	**98**	**98**	**99**	**100**	**100**
1st Dust Load PSE	**73**	**81**	**86**	**91**	**95**	**97**	**98**	**99**	**100**	**100**	**100**	**100**
2nd Dust Load PSE	**72**	**81**	**87**	**92**	**96**	**97**	**98**	**99**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**73**	**82**	**88**	**93**	**96**	**97**	**99**	**99**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**77**	**85**	**90**	**94**	**97**	**98**	**99**	**99**	**100**	**100**	**100**	**100**
Composite Min PSE	**63**	**74**	**81**	**85**	**92**	**93**	**96**	**98**	**98**	**99**	**100**	**100**



Bkg Concentration (particles/cm^3)	Avg Cond Aerosol Conc (particles/cm^3)	Cumulative Cond Duration (minutes)	Cumulative Cond CT (particles-min/cm^3)
1.7	**5.01E+05**	**406**	**2.03E+08**

Large Particle Concentration (Particles/cm^3)	Ratio Small to Large (>20,000)	Conditioning ΔP (inWG)		Same duct?
		Initial ΔP	Final ΔP	
22	**22,782**	**0.53**	**0.55**	**22.00**

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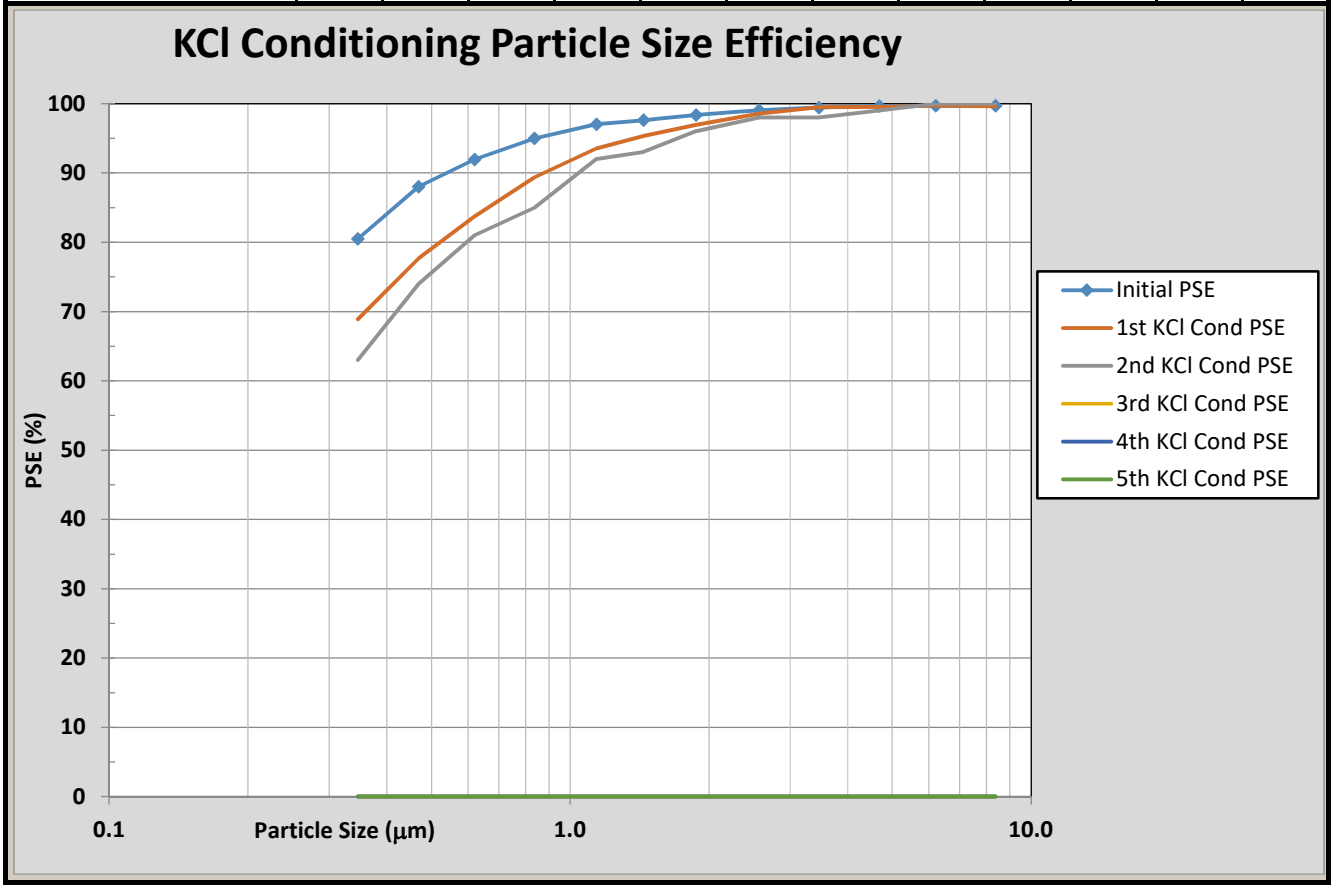
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	03/26/2020	Test Number:	200326_1765
Manufacturer		Filter Model	Filter Part Number
Camfil USA		**OPDMV15 24x24x2**	**855142031**

KCl Conditioning Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**80**	**88**	**92**	**95**	**97**	**98**	**98**	**99**	**99**	**100**	**100**	**100**
1st KCl Cond PSE	**69**	**78**	**84**	**89**	**94**	**95**	**97**	**99**	**99**	**100**	**100**	**100**
2nd KCl Cond PSE	**63**	**74**	**81**	**85**	**92**	**93**	**96**	**98**	**98**	**99**	**100**	**100**
3rd KCl Cond PSE												
4th KCl Cond PSE												
5th KCl Cond PSE												
Final KCl Cond PSE	**63**	**74**	**81**	**85**	**92**	**93**	**96**	**98**	**98**	**99**	**100**	**100**



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ASHRAE 52.2-2017 Test Results w/Appendix J Results

Filter Description

Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV15 24x24x4**	**855143-031**

Filter Type	Media Type	Media Color	Media Area (ft^2)
Minipleat	**Synthetic**	**White**	**77**

Nominal Size	Actual Size				
HxWxD	Hgt (in)	Wid (in)	Dep (in)	Pleats/Pockets	UL Rating
24"x24"x4"	**23 3/8**	**23 3/8**	**3 3/4**	**69**	**Yes**

ASHRAE 52.2-2017

Test Report:	191211_1616		
Time:	12:51:07	Date:	Dec 19, 2019

Test Data	Test Results	Rated Values	
AirFlow (cfm)	2010	2000	
Nominal Vel (fpm)	503	500	
Initial ΔP (inWG)	0.51	0.50	
MERV	15	15	@2010cfm
E_1 (0.3-1.0μm), (%)	92	≥ 85	
E_2 (1.0-3.0μm), (%)	98	≥ 90	
E_3 (3.0-10μm), (%)	100	≥ 95	
Final DP, (inWG)	1.5	1.0	
Arrestance, (%)	100	98	
DHC, (g)	169		

Temp, (F)	72	Test Aerosol	KCL
RH, (%)	49	Loading Dust	ASHRAE

ASHRAE 52.2-2017 w/App J

Test Report:	200521_1726		
Time:	11:27:27	Date:	May 21, 2020

Test Data	Test Results	Rated Values	
AirFlow (cfm)	1993	2000	
Nominal Vel (fpm)	498	500	
Initial ΔP (inWG)	0.51	0.50	
MERV-A	14A	15A	@1993cfm
E_1-A (0.3-1.0μm), (%)	80	≥ 85	
E_2-A (1.0-3.0μm), (%)	98	≥ 90	
E_3-A (3.0-10μm), (%)	100	≥ 95	
Final DP, (inWG)	1.5	1.0	
Arrestance-A, (%)	99	98	
DHC-A, (g)	150		

Temp, (F)	75	Test Aerosol	KCL
RH, (%)	48	Loading Dust	ASHRAE

Certified Test Per ASHRAE 52.2-2017

Approval:	*Don Thornburg, R&D Manager* **Electronic Signature, Original on file**

Operator	Particle Counter	Model
EO	**TSI**	**OPS-3330**

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ASHRAE® 52.2-2017 Test Results

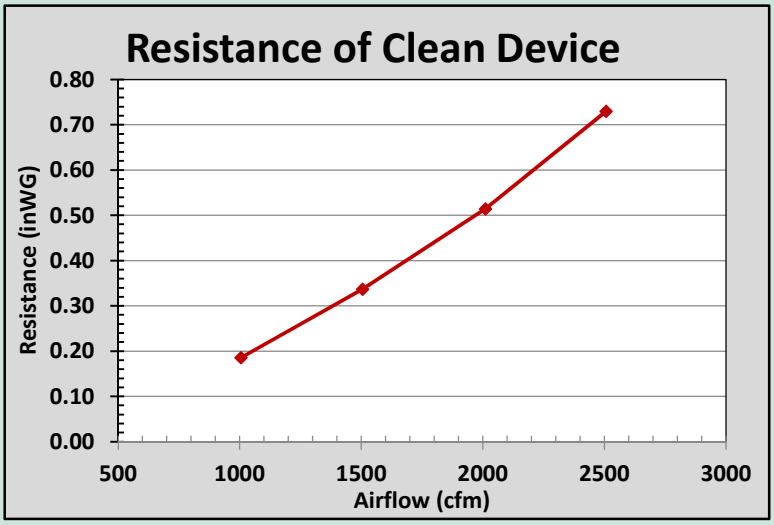
Date:	Dec 19, 2019	Test Report:	191211_1616

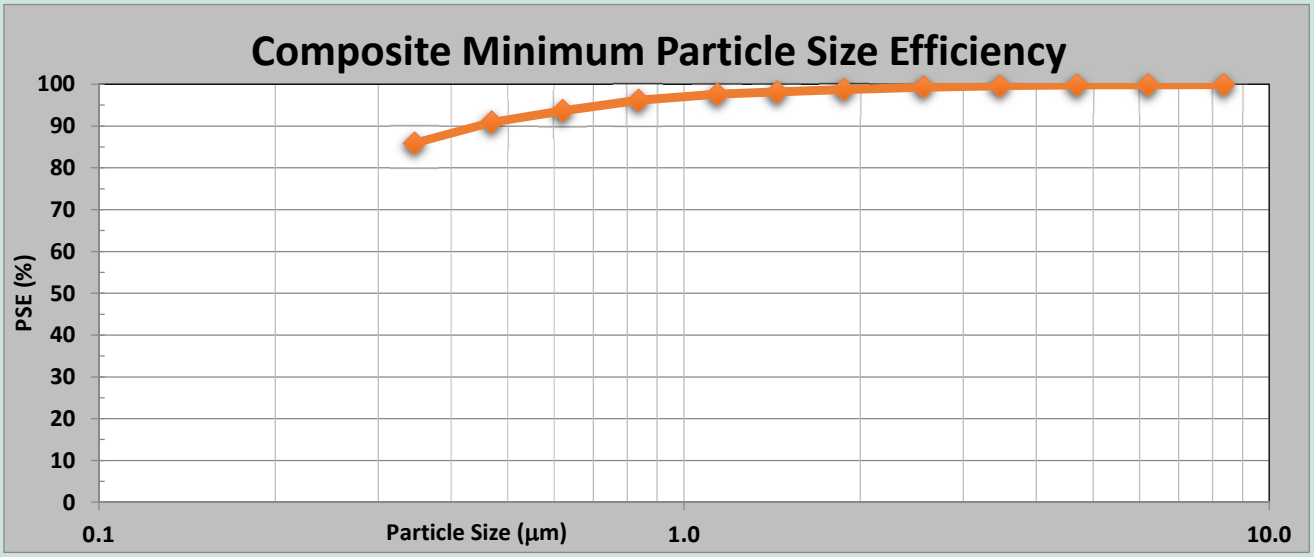
Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV15 24x24x4**	**855143-031**

Clean Resistance Table

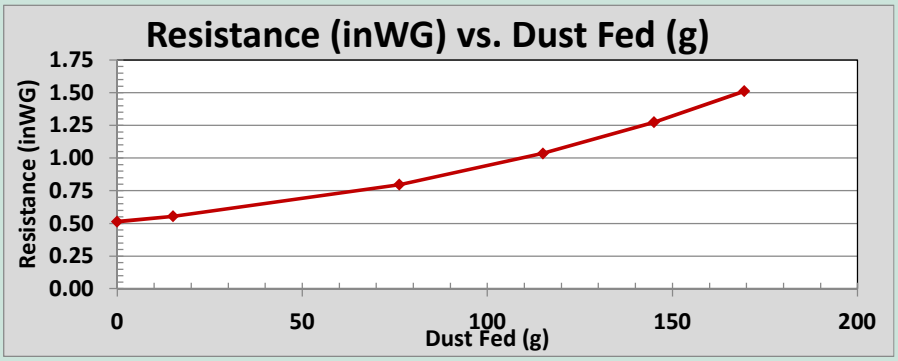
cfm	*m^3/s*	*inWG*	*Pa*
1005	0.47	0.185662	46
1505	0.71	0.336763	84
2010	0.95	0.513985	128
2506	1.18	0.729787	182

248.8454





ΔP (inWG)	Dust Fed (g)
0.51	**0**
0.55	**15**
0.80	**76**
1.03	**115**
1.27	**145**
1.51	**169**



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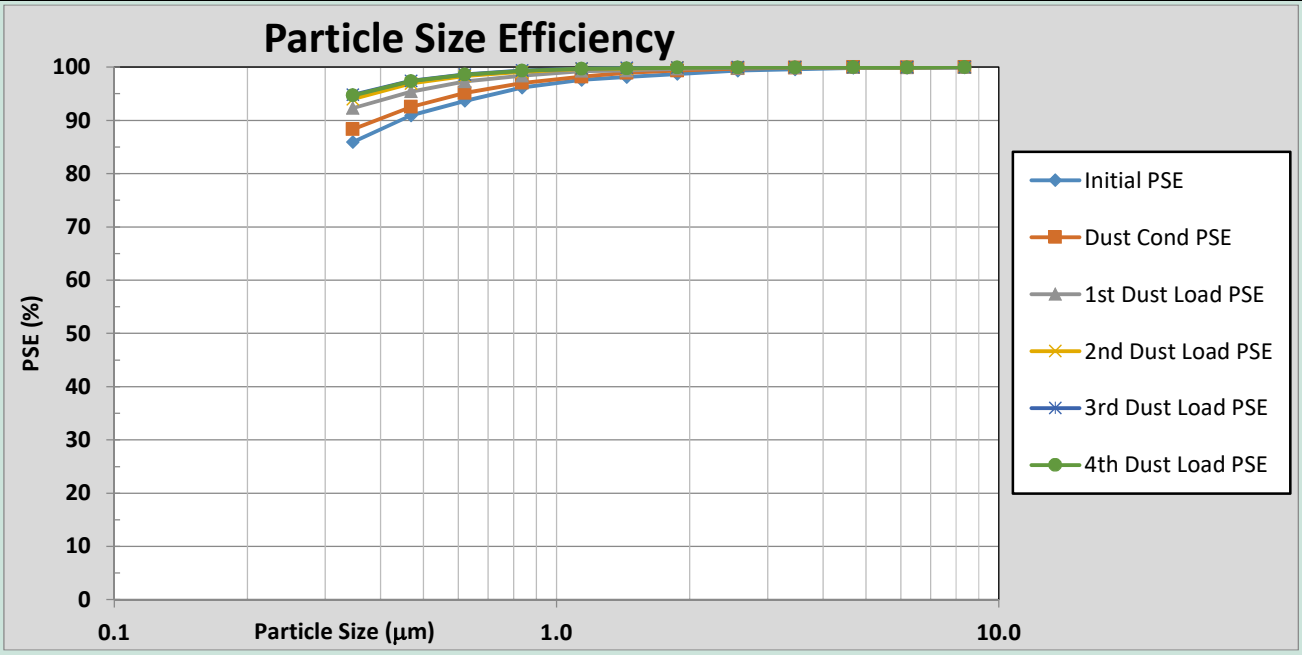
ASHRAE® 52.2-2017 Test Results

Date:	Dec 19, 2019	Test Report:	191211_1616
Manufacturer		Filter Model	Filter Part Number
Camfil USA		OPDBMV15 24x24x4	855143-031

Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**86**	**91**	**94**	**96**	**98**	**98**	**99**	**99**	**100**	**100**	**100**	**100**
Dust Cond PSE	**88**	**93**	**95**	**97**	**98**	**99**	**99**	**100**	**100**	**100**	**100**	**100**
1st Dust Load PSE	**92**	**95**	**97**	**98**	**99**	**99**	**100**	**100**	**100**	**100**	**100**	**100**
2nd Dust Load PSE	**94**	**97**	**98**	**99**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**95**	**97**	**99**	**99**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**95**	**97**	**99**	**99**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Composite Min PSE	**86**	**91**	**94**	**96**	**98**	**98**	**99**	**99**	**100**	**100**	**100**	**100**



All testing is performed in compliance with the latest revision of ASHRAE Standard 52.2 in a state-of-the-art laboratory facility located at the Camfil USA headquarters in Riverdale, NJ. Test Reports without DHC values show efficiency only and the associated MERV value is a estimated value based on the single efficiency data shown. For more information, contact your local Camfil representative or distributor.

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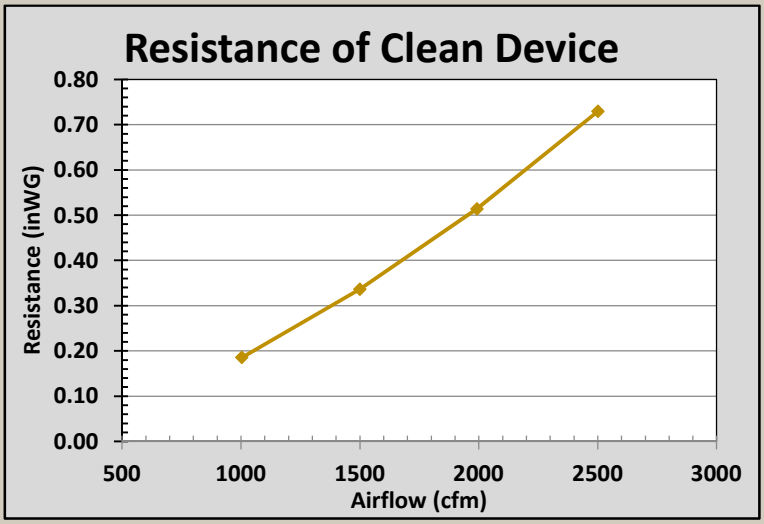
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

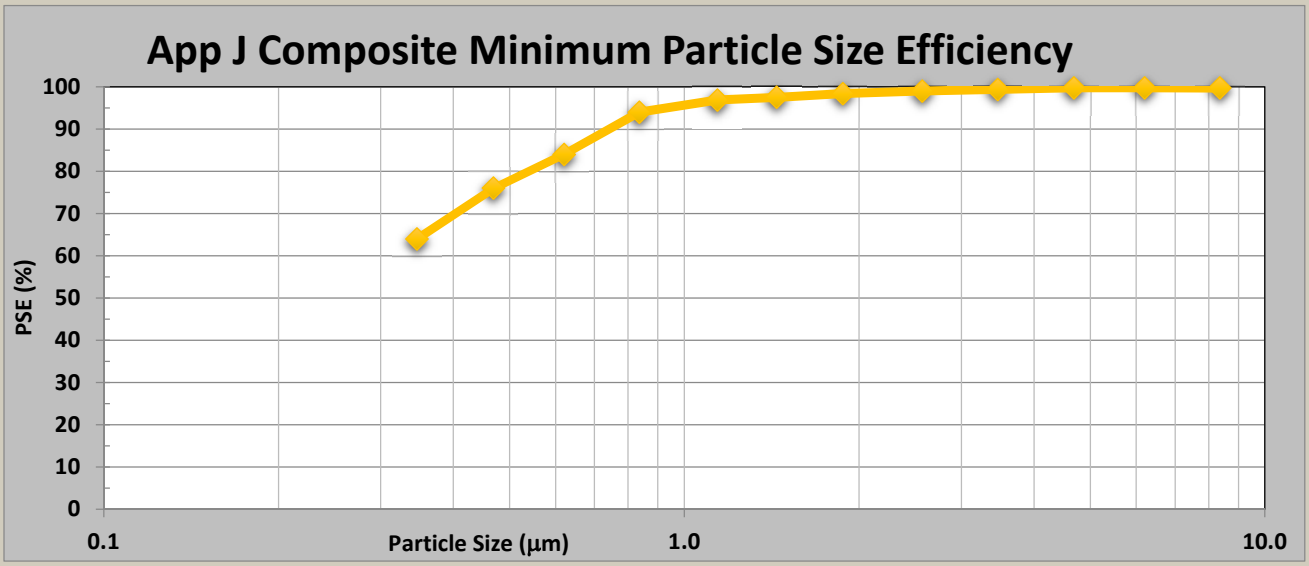
Date:	05/21/2020	Test Number:	200521_1726

Manufacturer	Filter Model	Filter Part Number
Camfil USA	**OPDBMV15 24x24x4**	**855143-031**

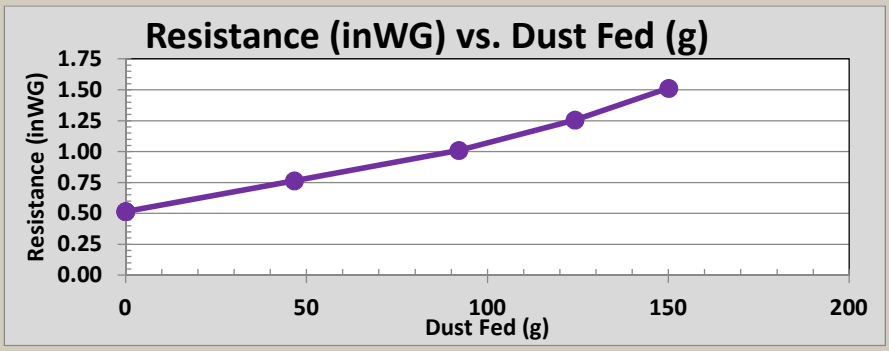
Clean Resistance Table

cfm	*m^3/s*	*inWG*	*Pa*
1004	0.47	0.185662	46
1500	0.71	0.336763	84
1993	0.94	0.513985	128
2501	1.18	0.729787	182





ΔP (inWG)	Dust Fed (g)
0.51	0
0.51	0
0.76	47
1.01	92
1.25	124
1.51	150



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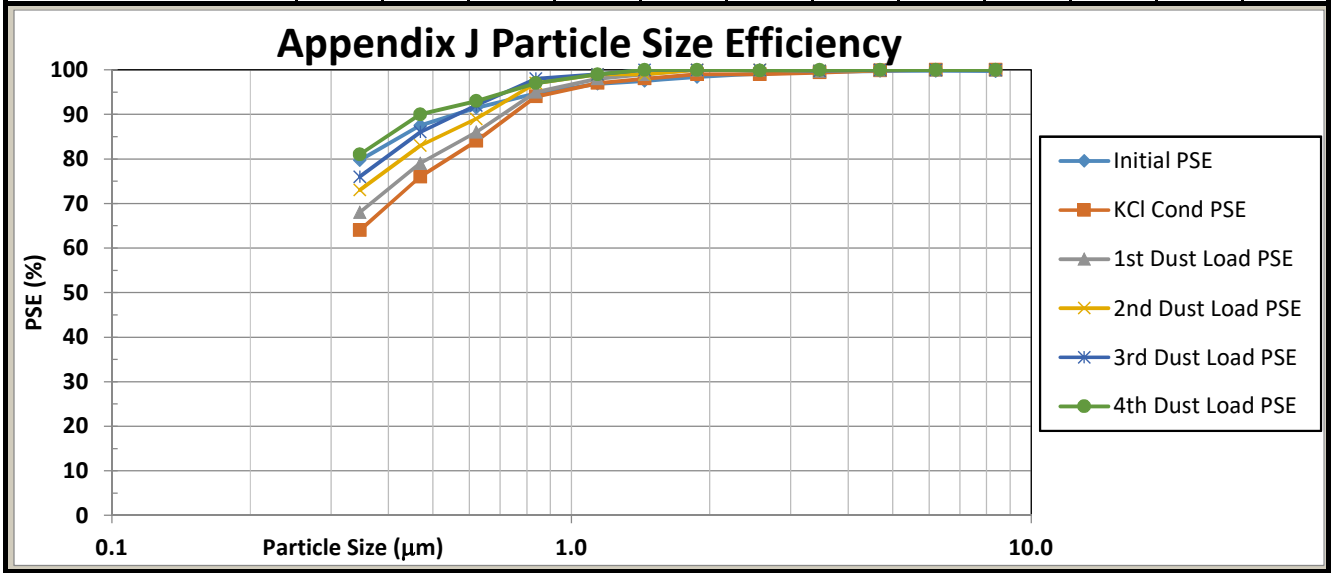
ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	05/21/2020	Test Number:	200521_1726
Manufacturer		Filter Model	Filter Part Number
Camfil USA		OPDBMV15 24x24x4	855143-031

App J Efficiency Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**80**	**88**	**91**	**95**	**97**	**98**	**98**	**99**	**100**	**100**	**100**	**100**
KCl Cond PSE	**64**	**76**	**84**	**94**	**97**	**98**	**99**	**99**	**99**	**100**	**100**	**100**
1st Dust Load PSE	**68**	**79**	**86**	**95**	**98**	**99**	**100**	**100**	**100**	**100**	**100**	**100**
2nd Dust Load PSE	**73**	**83**	**89**	**97**	**99**	**99**	**100**	**100**	**100**	**100**	**100**	**100**
3rd Dust Load PSE	**76**	**86**	**92**	**98**	**99**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
4th Dust Load PSE	**81**	**90**	**93**	**97**	**99**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Composite Min PSE	**64**	**76**	**84**	**94**	**97**	**98**	**98**	**99**	**99**	**100**	**100**	**100**



Bkg Concentration (particles/cm^3)	Avg Cond Aerosol Conc (particles/cm^3)	Cumulative Cond Duration (minutes)	Cumulative Cond CT (particles-min/cm^3)
1.5	**5.05E+05**	**725**	**3.66E+08**

Large Particle Concentration (Particles/cm^3)	Ratio Small to Large (>20,000)	Conditioning ΔP (inWG)		Same duct?
		Initial ΔP	Final ΔP	
2	**280,556**	**0.51**	**0.51**	**No**

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ASHRAE® 52.2-2017 Test Results w/ Appendix J Results

Date:	05/21/2020	Test Number:	200521_1726
Manufacturer		Filter Model	Filter Part Number
Camfil USA		**OPDBMV15 24x24x4**	**855143-031**

KCl Conditioning Data Table	1	2	3	4	5	6	7	8	9	10	11	12
Minimum Dia (µm)	0.3	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0
Maximum Dia (µm)	0.4	0.55	0.7	1.0	1.3	1.6	2.2	3.0	4.0	5.5	7.0	10.0
Geometric Mean (µm)	**0.35**	**0.47**	**0.62**	**0.84**	**1.14**	**1.44**	**1.88**	**2.57**	**3.46**	**4.69**	**6.20**	**8.37**
Initial PSE	**80**	**88**	**91**	**95**	**97**	**98**	**98**	**99**	**100**	**100**	**100**	**100**
1st KCl Cond PSE	**77**	**85**	**90**	**94**	**97**	**98**	**99**	**100**	**100**	**100**	**100**	**100**
2nd KCl Cond PSE	**73**	**82**	**88**	**93**	**96**	**98**	**98**	**99**	**100**	**100**	**100**	**100**
3rd KCl Cond PSE	**64**	**76**	**84**	**94**	**97**	**98**	**99**	**100**	**100**	**100**	**100**	**100**
4th KCl Cond PSE												
5th KCl Cond PSE												
Final KCl Cond PSE	**64**	**76**	**84**	**94**	**97**	**98**	**99**	**100**	**100**	**100**	**100**	**100**