

ASHRAE STANDARD 52.2 - 2007 TEST REPORT INITIAL PARTICLE REMOVAL EFFICIENCY & RESISTANCE

FILTER DATA

Date: 01/13/12 Test# 029

Filter: PermaFlo 1/2"
 Size: 24 x 24 x 1/2
 Media Area: 4 ft²
 Adhesive: NONE
 Antimicrobial:
 Description: 1/2" blue, rigid media.

Test Summary

Air Flow Rate: 1200 cfm (300 fpm)
 Test Aerosol: KCl, Neutralized
 Test Operator: J. Mazur

Resistance Traverse:

800 cfm (200 fpm)	0.02" w.g.
1000 cfm (250 fpm)	0.03" w.g.
1200 cfm (300 fpm)	0.04" w.g.

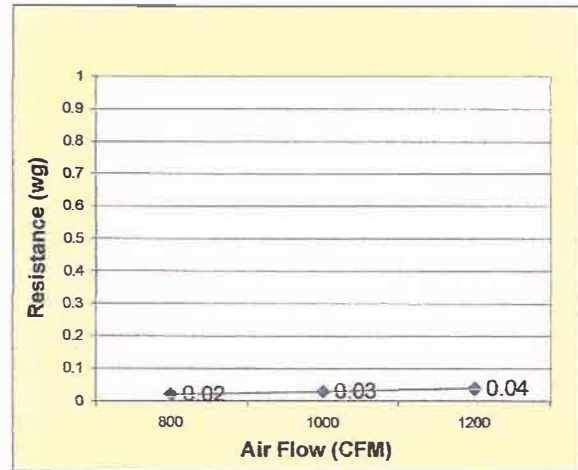
Estimated Initial Particle Removal Efficiency:

Range 1 (0.3 - 1.0 micron)	9.5%
Range 2 (1.0 - 3.0 micron)	17.3%
Range 3 (3.0 - 10 micron)	24.5%

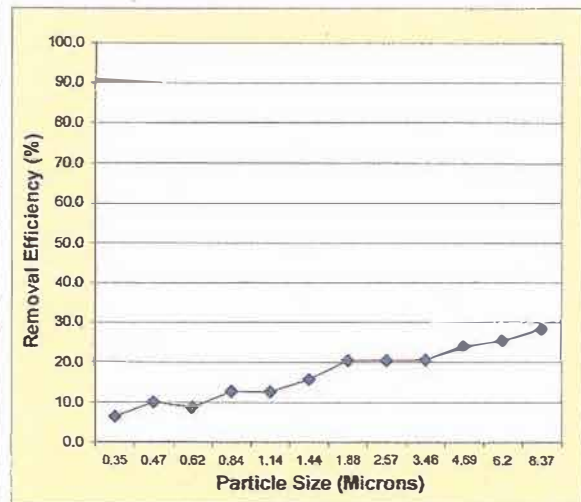
Minimum Efficiency Reporting Value (MERV) 5

*If Initial Data is Minimum

RESISTANCE VS. AIR FLOW



PARTICLE SIZE REMOVAL EFFICIENCY CURVE



ASHRAE STANDARD 52.2 - 2007 TEST REPORT INITIAL PARTICLE REMOVAL EFFICIENCY & RESISTANCE

FILTER DATA

Date: 01/13/12 Test# 030

Filter: PermaFlo, 1"

Size: 24 x 24 x 1

Media Area: 4 ft²

Adhesive: NONE

Antimicrobial:

Description: 1" blue, rigid media.

Test Summary

Air Flow Rate: 1200 cfm (300 fpm)

Test Aerosol: KCl, Neutralized

Test Operator: J. Mazur

Resistance Traverse:

800 cfm (200 fpm)	0.03" w.g.
1000 cfm (250 fpm)	0.04" w.g.
1200 cfm (300 fpm)	0.06" w.g.

Estimated Initial Particle Removal Efficiency:

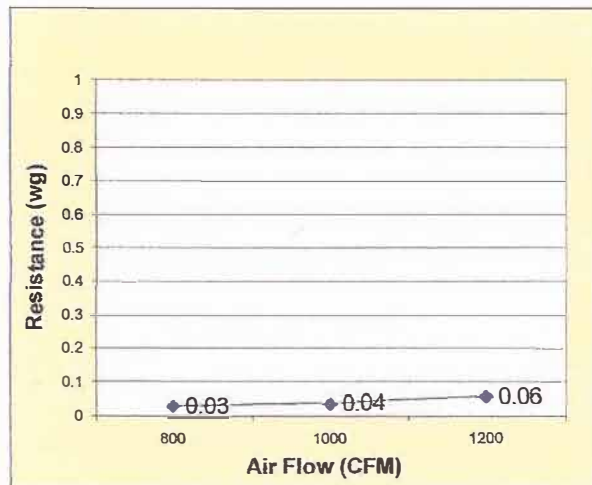
Range 1 (0.3 - 1.0 micron)	18.2%
Range 2 (1.0 - 3.0 micron)	30.1%
Range 3 (3.0 - 10 micron)	40.5%

Minimum Efficiency Reporting Value (MERV)

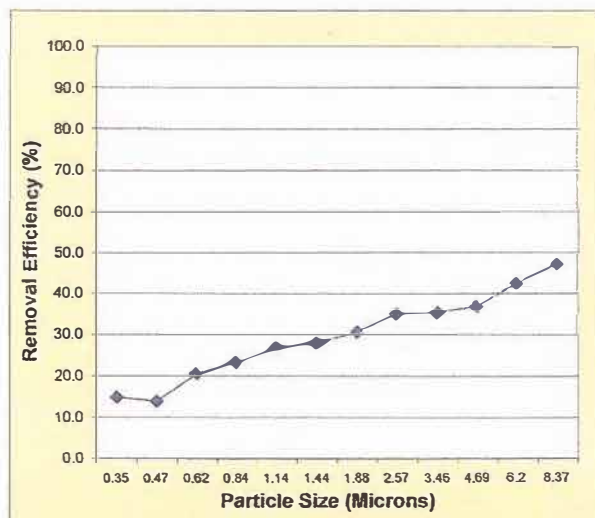
6

**If Initial Data is Minimum*

RESISTANCE VS. AIR FLOW



PARTICLE SIZE REMOVAL EFFICIENCY CURVE





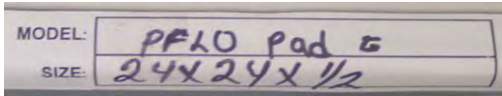
270 Haven Hill Road Shelbyville, KY 40065
 Phone: 502 494 5797 E-Mail: monroebritt@bellsouth.net

**Air Filter
 Test Report**

Report No.
GLT 4869
 18-Oct-16
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Full 52.2-2007 ASHRAE Test -- MERV 1 - 4 Procedures

(Test procedures and apparatus described in ASHRAE Standard 52.2-2012 and 2015 Supplements were used during these tests)

Filter Description		Test Conditions	
Manufacturer:	Permatron	Air Flow (CFM)	1180
Product Name:	panel filter	Face Velocity (FPM)	295
Model/Style Code:	PFLO1/2-G Pad	Air Temperature Range (°F)	83
Nominal Dimensions: (inches)	24 X 24 x 1/2	Relative Humidity Range (%)	50
Product Description:		Barometric Pressure Range (In. HG)	29.18
synthetic media pad with diagonal cross-wires on the outlet, metal frame		Type of Test Aerosol:	Neutralized KCl
Number of Filter Panels:	1	Particle Counters:	Met One 3413
Pleat Quantity :	flat panel	Filter Loading Dust:	ASHRAE
Pocket Quantity:	N/A	Test Results	
Media Type:	synthetic	Initial Resistance:	0.03 In. wg
Media Color:	grey	<u>Filter Resistance vs Air Flow</u>	
Media Area (literature):	4 sq ft	Air Flow - CFM	295 590 885 1180 1475
Type of Dust Adhesive:	None	Resistance - In. WG	0.01 0.01 0.02 0.03 0.05
Amount of Dust Adhesive:	N/A	<u>KCl Particle Size Efficiency</u>	
Filter Procurement Method:	Provided by Permatron	See Particle Size Efficiency Curve on Page 2 Particle efficiencies reported only for initial PSE test	
Additional Information:		Dust Holding Capacity	266 Grams
		Filter Final Resistance	1.00 In. W.G.
		Average Arrestance	71 %
		MERV	3 @ 295 FPM

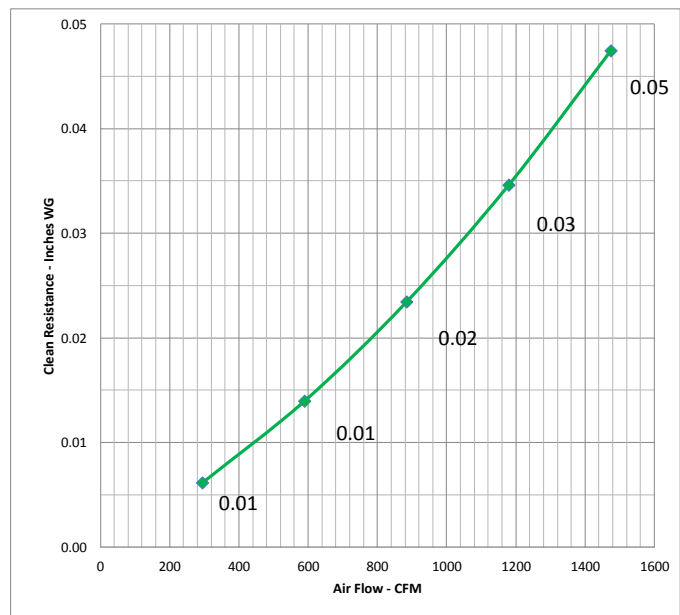
Photograph of Air Entering Side of Filter



Photograph of Air Leaving Side of Filter



Filter Resistance vs Air Flow



Comments:

Approval: Monroe A. Britt
 18-Oct-16



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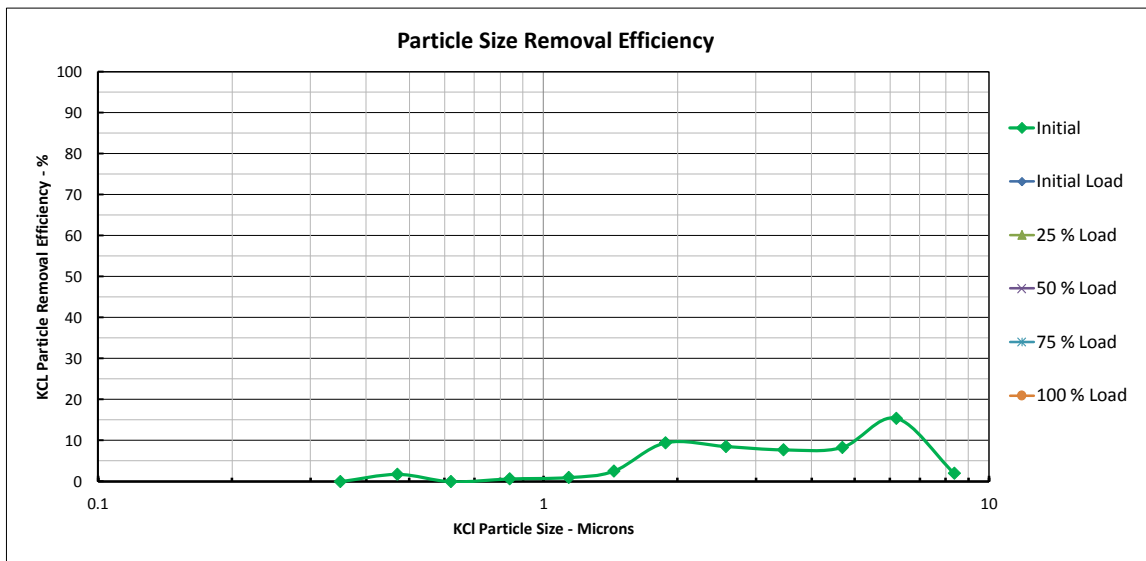
ASHRAE Air Filter

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Full 52.2-2007 ASHRAE Test -- MERV 1 - 4 Procedures

Filter Description		Test Conditions	
Manufacturer:	Permatron	Air Flow Capacity (CFM)	1180
Product Name:	panel filter	Face Velocity (FPM)	295
Model/Style Code:	PFLO1/2-G Pad	Air Temperature Range (oF)	83
Nominal Dimensions: (inches)	24 X 24 x 1/2	Relative Humidity Range (%)	50
Media Type:	synthetic	Barometric Pressure Range (In. HG)	29.18
Media Color:	grey	Type of Test Aerosol:	Neutralized KCl
Effective Media Area:	4 sq ft	Particle Counters:	Met One 3413
Filter Procurement Method:	Provided by Permatron	Filter Loading Dust:	ASHRAE



KCL Particle Range - Microns	0.30 - 0.40	0.4 - 0.55	0.55 - 0.70	0.70 - 1.00	1.00 - 1.30	1.30 - 1.60	1.60 - 2.20	2.20 - 3.00	3.00 - 4.00	4.00 - 5.50	5.50 - 7.00	7.00 - 10.0	Resistance after Load - In. WG	Accumulative Dust Load - Grams	
Mean Diameter Microns	0.35	0.47	0.62	0.84	1.14	1.44	1.88	2.57	3.46	4.69	6.2	8.37			
KCL Particle Size Efficiency - %															
Initial	0.00	1.78	0.00	0.66	1.00	2.56	9.45	8.55	7.75	8.32	15.42	2.03	0.56	0	
Initial Load															
25 % Load															
50 % Load															
75 % Load															
100 % Load															
Minimum PSE'S	0.00	1.78	0.00	0.66	1.00	2.56	9.45	8.55	7.75	8.32	15.42	2.03			
E1, E2, E3	Avg Effic - 0.3 to 1.0 Microns			0.61	Avg Effic - 1.0 to 3.0 Microns			5.39	Avg Effic - 3.0 to 10.0 Microns			8.38	Dust Holding Capacity to Inches WG		
	Grams														

Comments

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ASHRAE Air Filter

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Full 52.2-2007 ASHRAE Test -- MERV 1 - 4 Procedures

Filter Description

Test Conditions

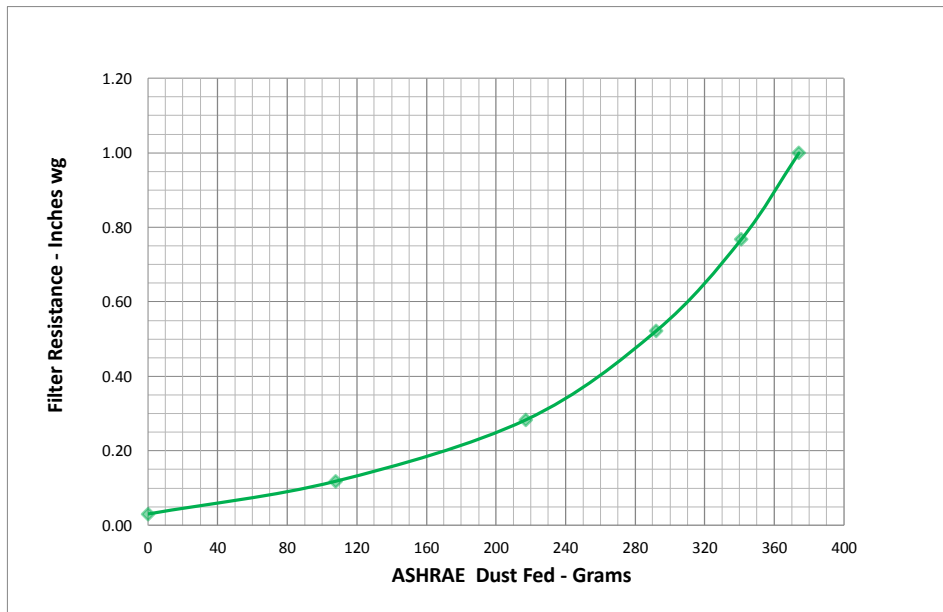
Manufacturer:	Permatron	Air Flow Capacity (CFM)	1180
Product Name:	panel filter	Face Velocity (FPM)	295
Model/Style Code:	PFO1/2-G Pad	Air Temperature Range (oF)	83
Nominal Dimensions: (inches)	24 X 24 x 1/2	Relative Humidity Range (%)	50
Media Type:	synthetic	Barometric Pressure Range (In. HG)	29.18
Media Color:	grey	Type of Test Aerosol:	Neutralized KCl
Effective Media Area:	4 sq ft	Particle Counter:	Met One 3413
Filter Procurement Method:	Provided by Permatron	Filter Loading Dust:	ASHRAE

Dust Holding Capacity and Arrestance Data

Dust Fed - Grams	0	108	217	292	341	374
Filter Resistance - In. wg	0.03	0.12	0.28	0.52	0.78	1.00

Average Arrestance	71.0%	Final Resistance	1.0 In. wg
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Dust Holding Capacity	266 gms
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Comments:

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 18-Oct-16



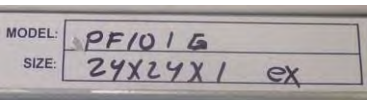
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**Air Filter
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Full 52.2-2007 ASHRAE Test -- MERV 1 - 4 Procedures

(Test procedures and apparatus described in ASHRAE Standard 52.2-2012 and 2015 Supplements were used during these tests)

Filter Description		Test Conditions	
Manufacturer:	Permatron	Air Flow (CFM)	1180
Product Name:	panel filter	Face Velocity (FPM)	295
Model/Style Code:	PFLO 1-G EXP	Air Temperature Range (°F)	82
Nominal Dimensions: (inches)	24 X 24 x 1	Relative Humidity Range (%)	50
Product Description:	synthetic media pad with expanded metal on rear, metal frame	Barometric Pressure Range (In. HG)	29.15
Number of Filter Panels:	1	Type of Test Aerosol:	Neutralized KCl
Pleat Quantity :	flat panel	Particle Counters:	Met One 3413
Pocket Quantity:	N/A	Filter Loading Dust:	none
Media Type:	synthetic	Test Results	
Media Color:	grey	Initial Resistance:	0.05 In. wg
Media Area (literature):	4 sq ft	<u>Filter Resistance vs Air Flow</u>	
Type of Dust Adhesive:	None	Air Flow - CFM	295 590 885 1180 1475
Amount of Dust Adhesive:	N/A	Resistance - In. WG	0.01 0.02 0.03 0.05 0.07
Filter Procurement Method:	Provided by Permatron	<u>KCl Particle Size Efficiency</u>	
See Particle Size Efficiency Curve on Page 2 Particle efficiencies reported only for initial PSE test			
Additional Information:		Dust Holding Capacity	357 Grams
		Filter Final Resistance	1.00 In. W.G.
		Average Arrestance	75 %
		MERV	4 @ 295 FPM

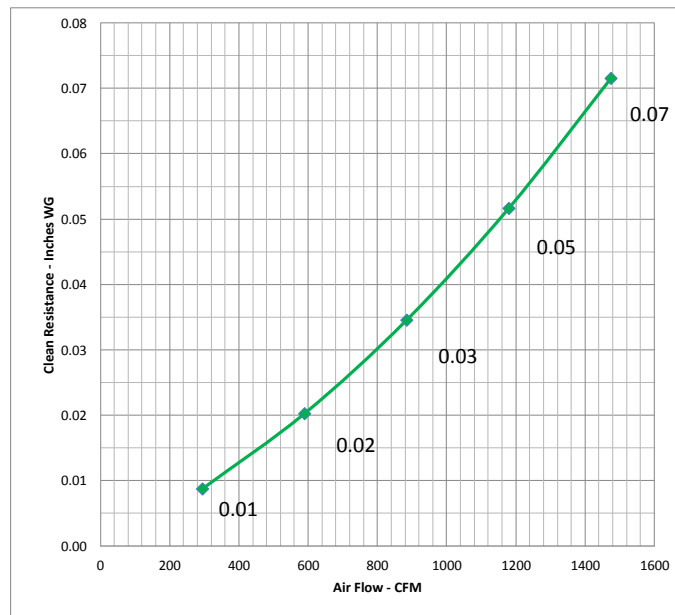
Photograph of Air Entering Side of Filter



Photograph of Air Leaving Side of Filter



Filter Resistance vs Air Flow



Comments:

Approval: Monroe A. Britt
 18-Oct-16



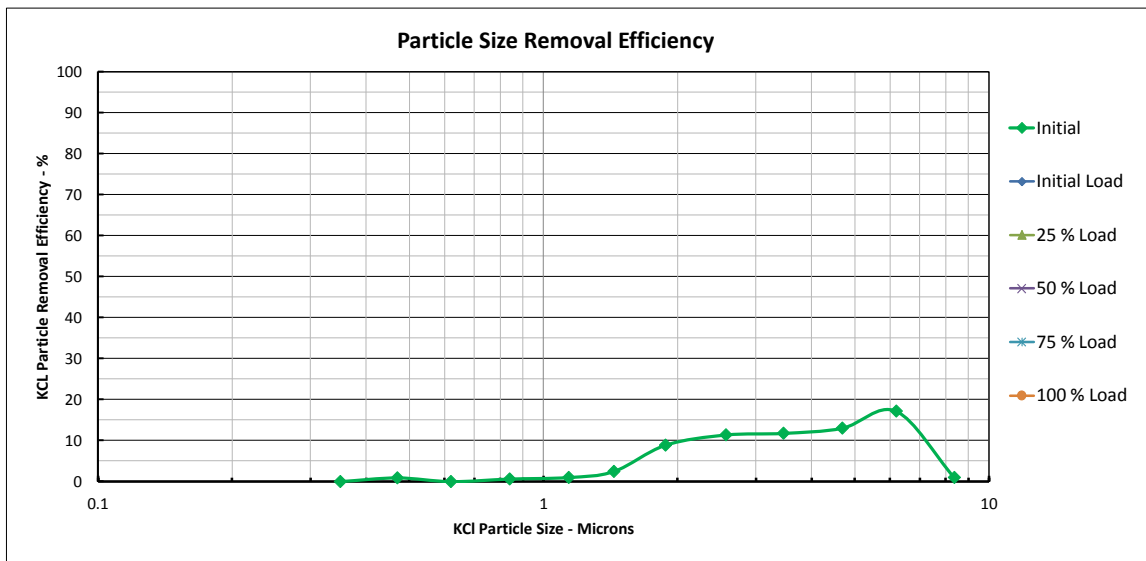
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ASHRAE Air Filter Test Report

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Full 52.2-2007 ASHRAE Test -- MERV 1 - 4 Procedures

Filter Description		Test Conditions	
Manufacturer:	Permatron	Air Flow Capacity (CFM)	1180
Product Name:	panel filter	Face Velocity (FPM)	295
Model/Style Code:	PFLO 1-G EXP	Air Temperature Range (oF)	82
Nominal Dimensions: (inches)	24 X 24 x 1	Relative Humidity Range (%)	50
Media Type:	synthetic	Barometric Pressure Range (In. HG)	29.15
Media Color:	grey	Type of Test Aerosol:	Neutralized KCl
Effective Media Area:	4 sq ft	Particle Counters:	Met One 3413
Filter Procurement Method:	Provided by Permatron	Filter Loading Dust:	none



KCL Particle Range - Microns	0.30 - 0.40	0.4 - 0.55	0.55 - 0.70	0.70 - 1.00	1.00 - 1.30	1.30 - 1.60	1.60 - 2.20	2.20 - 3.00	3.00 - 4.00	4.00 - 5.50	5.50 - 7.00	7.00 - 10.0	Resistance after Load - In. WG	Accumulative Dust Load - Grams	
Mean Diameter Microns	0.35	0.47	0.62	0.84	1.14	1.44	1.88	2.57	3.46	4.69	6.2	8.37			
KCL Particle Size Efficiency - %															
Initial	0.00	0.91	0.00	0.63	1.00	2.47	8.89	11.40	11.79	13.04	17.20	1.00	0.56	0	
Initial Load															
25 % Load															
50 % Load															
75 % Load															
100 % Load															
Minimum PSE'S	0.00	0.91	0.00	0.63	1.00	2.47	8.89	11.40	11.79	13.04	17.20	1.00			
E1, E2, E3	Avg Effic - 0.3 to 1.0 Microns			0.38	Avg Effic - 1.0 to 3.0 Microns			5.94	Avg Effic - 3.0 to 10.0 Microns			10.76	Dust Holding Capacity to Inches WG		
														Grams	

Comments

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18-Oct-16



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Full 52.2-2007 ASHRAE Test -- MERV 1 - 4 Procedures

Filter Description

Test Conditions

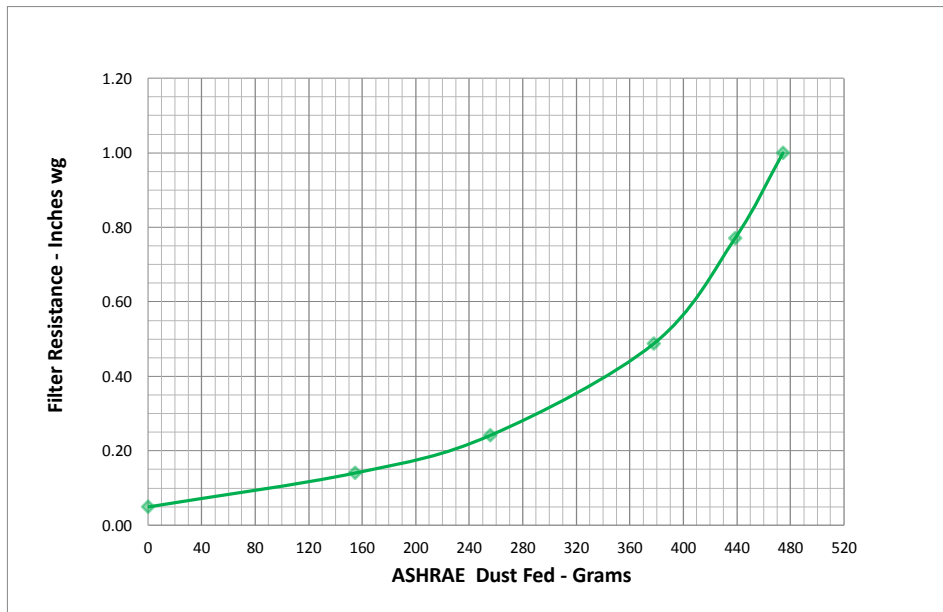
Manufacturer:	Permatron	Air Flow Capacity (CFM)	1180
Product Name:	panel filter	Face Velocity (FPM)	295
Model/Style Code:	PFLO 1-G EXP	Air Temperature Range (oF)	82
Nominal Dimensions: (inches)	24 X 24 x 1	Relative Humidity Range (%)	50
Media Type:	synthetic	Barometric Pressure Range (In. HG)	29.15
Media Color:	grey	Type of Test Aerosol:	Neutralized KCl
Effective Media Area:	4 sq ft	Particle Counter:	Met One 3413
Filter Procurement Method:	Provided by Permatron	Filter Loading Dust:	none

Dust Holding Capacity and Arrestance Data

Dust Fed - Grams	0	155	256	378	439	475
Filter Resistance - In. wg	0.05	0.14	0.24	0.49	0.77	1.00

Average Arrestance	75.2%	Final Resistance	1.0 In. wg
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Dust Holding Capacity	357 grams
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Comments:

Approval: Monroe A. Britt
 18-Oct-16