



2820 S. English Station Road - Louisville, KY 40299

TEST NO. 18-367-1r1

ISO 16890-2 /-4:2016 Air Filter Test Result Summary

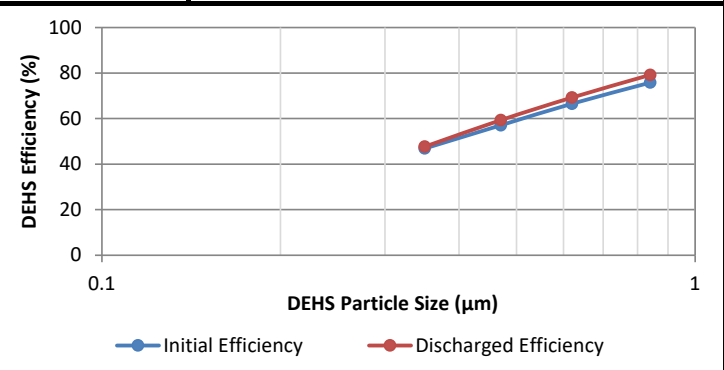
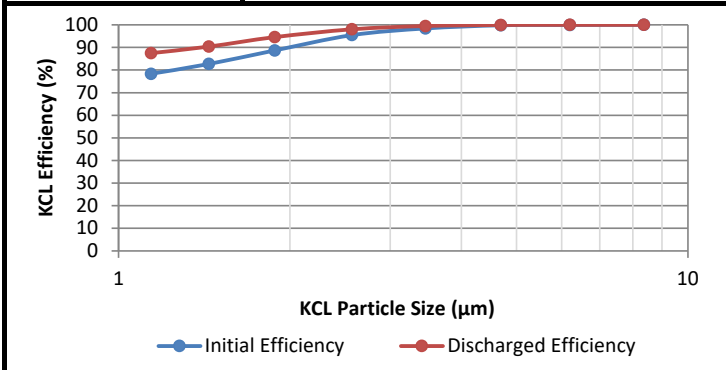
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Counter Information	Manufacturer	TSI, Inc.
	Model No.	3330
	Serial No.	3330123101
IPA Discharge Method		<input checked="" type="checkbox"/> Vapor Treated <input type="checkbox"/> IPA Dip Method

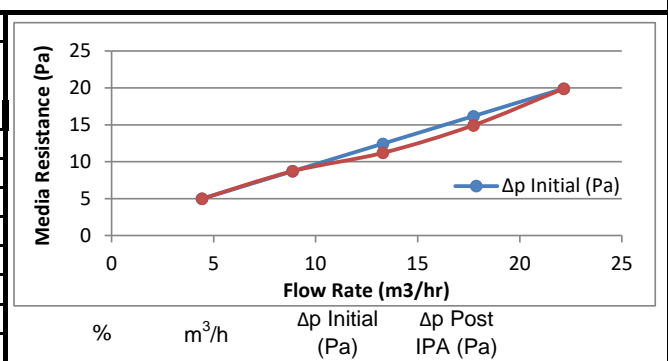
Test Conditions	Test Flow Rate	10.5 CFM / 17.84 m ³ /h
	Test Aerosol	Aerosolized KCl & DEHS
	Temperature	77.3 Deg F / 25.2 Deg C
	Relative Humidity	51.7 %
	Barometer	29.22 in Hg / 98.95 kPa

Device Tested	Manufacturer	Abalioglu Teknoloji
	Product Code	HF-STP4720-07
	Dimensions	1.0 ft ² / 0.0929 m ²
	Type of Media	Synthetic
	Media Area	1.0 ft ² / 0.0929 m ²
	Construction	NA
	Filter/Media Electrostatic Charge	No
	Media Color	White
	Media Adhesive	NA
Sample Procurement	Abalioglu Teknoloji	

Sample was cut into two pieces. One sample was IPA Vapor conditioned over the weekend. Both samples tested on Monday July 23, 2018.



KCL					
Range (µm)	Geo. Mean	Initial Efficiency (%)	Discharged Efficiency (%)	Upstream Number of Particles per Test	
				Pre	Post
1.0-1.3	1.14	78	87	22053	19637
1.3-1.6	1.44	83	90	20366	18081
1.6-2.0	1.88	89	95	45880	40809
2.0-3.0	2.57	95	98	30667	27342
3.0-4.0	3.46	98	99	16048	15201
4.0-5.5	4.69	100	100	8240	8208
5.5-7.0	6.20	100	100	2051	2261
7.0-10.0	8.37	100	100	847	1057



%	m ³ /h	Δp Initial (Pa)	Δp Post IPA (Pa)
25	4.43	5.0	5.0
50	8.86	8.7	8.7
75	13.29	12.4	11.2
100	17.72	16.2	14.9
125	22.15	19.9	19.9

DEHS					
Range (µm)	Geo. Mean	Initial Efficiency (%)	Discharged Efficiency (%)	Upstream Number of Particles per Test	
				Pre	Post
0.3-0.4	0.35	47	48	108266	365131
0.4-0.55	0.47	57	59	93398	314955
0.55-0.7	0.62	67	69	51930	169579
0.7-1.0	0.84	76	79	57828	181376

Reporting Data			
	ePM ₁	ePM _{2.5}	ePM ₁₀
Minimum	61%	71%	91%
Average	60%	70%	90%
Reported	60%	70%	90%

Requestor Information	Test Requestor	Aysegul Zumbuller Fener	Phone:	
	Company Name	Abalioglu Teknoloji	Email:	aysegul.fener@abaliogluteknoloji.com.tr
Test Operator Information	Company Address	Sumer Mah, Cal Cad. N 78 20175 Denizli Turke	Requested Date:	7/12/2018
	Test Performed By:	Glen Toloczko	Completion Date:	7/23/2018

ISO 16890-1										
Data Entry Table							Reporting Data			
DEHS								ePM ₁	ePM _{2.5}	ePM ₁₀
d_i	d_{i+1}	d_m	$\Delta \ln d_i$	E_i	$E_{D,i}$	$E_{A,i}$	Minimum	61%	71%	--
0.30	0.40	0.35	0.29	46.9%	47.7%	47.3%	Average	60%	70%	90%
0.40	0.55	0.47	0.32	57.1%	59.3%	58.2%	Reported	60%	70%	90%
0.55	0.70	0.62	0.24	66.5%	69.3%	67.9%				
0.70	1.00	0.84	0.36	75.8%	79.2%	77.5%				
KCL										
1.00	1.30	1.14	0.26	78.4%	87.5%	82.9%				
1.30	1.60	1.44	0.21	82.7%	90.4%	86.5%				
1.60	2.20	1.88	0.32	88.7%	94.6%	91.6%				
2.20	3.00	2.57	0.31	95.5%	98.0%	96.7%				
3.00	4.00	3.46	0.29	98.4%	99.5%	99.0%				
4.00	5.50	4.69	0.32	99.8%	99.9%	99.9%				
5.50	7.00	6.20	0.24	100.0%	100.0%	100.0%				
7.00	10.00	8.37	0.36	100.0%	100.0%	100.0%				
ePM ₁ Calculations										
d_i	d_{i+1}	d_m	$\Delta \ln d_i$	$E_{A,i}$	$q_{3\sigma}$	$q_{3\sigma} \cdot \Delta \ln d_i$	$E_{D,i} \cdot q_{3\sigma} \cdot \Delta \ln d_i$	$E_{A,i} \cdot q_{3\sigma} \cdot \Delta \ln d_i$	$E_{min}(PM_1)$	$E(PM_1)$
0.30	0.40	0.35	0.29	47.3%	22.627%	0.065095	0.031033	0.030773	61%	60%
0.40	0.55	0.47	0.32	58.2%	19.891%	0.063343	0.037579	0.036861		
0.55	0.70	0.62	0.24	67.9%	15.837%	0.038193	0.026451	0.025932		
0.70	1.00	0.84	0.36	77.5%	11.522%	0.041097	0.032553	0.031856		
Sums:					0.207728	0.127616	0.125422			
ePM _{2.5} Calculations										
d_i	d_{i+1}	d_m	$\Delta \ln d_i$	$E_{A,i}$	$q_{3\sigma}$	$q_{3\sigma} \cdot \Delta \ln d_i$	$E_{D,i} \cdot q_{3\sigma} \cdot \Delta \ln d_i$	$E_{A,i} \cdot q_{3\sigma} \cdot \Delta \ln d_i$	$E_{min}(PM_{2.5})$	$E(PM_{2.5})$
0.30	0.40	0.35	0.29	47.3%	22.627%	0.065095	0.031033	0.030773	71%	70%
0.40	0.55	0.47	0.32	58.2%	19.891%	0.063343	0.037579	0.036861		
0.55	0.70	0.62	0.24	67.9%	15.837%	0.038193	0.026451	0.025932		
0.70	1.00	0.84	0.36	77.5%	11.522%	0.041097	0.032553	0.031856		
1.00	1.30	1.14	0.26	82.9%	8.503%	0.022309	0.019514	0.018497		
1.30	1.60	1.44	0.21	86.5%	7.618%	0.015817	0.014295	0.013686		
1.60	2.20	1.88	0.32	91.6%	8.022%	0.025546	0.024158	0.023405		
2.20	3.00	2.57	0.31	96.7%	9.984%	0.030966	0.030353	0.029955		
Sums:					0.302366	0.215936	0.210965			
ePM ₁₀ Calculations										
d_i	d_{i+1}	d_m	$\Delta \ln d_i$	$E_{A,i}$	$q_{3\sigma}$	$q_{3\sigma} \cdot \Delta \ln d_i$	$E_{D,i} \cdot q_{3\sigma} \cdot \Delta \ln d_i$	$E_{A,i} \cdot q_{3\sigma} \cdot \Delta \ln d_i$	$E_{min}(PM_{10})$	$E(PM_{10})$
0.30	0.40	0.35	0.29	47.3%	9.412%	0.027077	0.012909	0.012800	91%	90%
0.40	0.55	0.47	0.32	58.2%	8.395%	0.026733	0.015860	0.015557		
0.55	0.70	0.62	0.24	67.9%	7.432%	0.017924	0.012414	0.012170		
0.70	1.00	0.84	0.36	77.5%	7.014%	0.025016	0.019815	0.019391		
1.00	1.30	1.14	0.26	82.9%	7.628%	0.020013	0.017506	0.016594		
1.30	1.60	1.44	0.21	86.5%	8.833%	0.018340	0.016575	0.015868		
1.60	2.20	1.88	0.32	91.6%	10.804%	0.034406	0.032537	0.031524		
2.20	3.00	2.57	0.31	96.7%	13.726%	0.042573	0.041731	0.041184		
3.00	4.00	3.46	0.29	99.0%	16.708%	0.048067	0.047825	0.047564		
4.00	5.50	4.69	0.32	99.9%	19.542%	0.062233	0.062202	0.062158		
5.50	7.00	6.20	0.24	100.0%	21.671%	0.052261	0.052261	0.052249		
7.00	10.00	8.37	0.36	100.0%	23.143%	0.082545	0.082545	0.082545		
Sums:					0.457189	0.414179	0.409602			

