Filtration Performance Report

General information

Performing institute:	Massachusetts Institute of Engineering
Test performer:	RP
Date of test:	05/28/2020

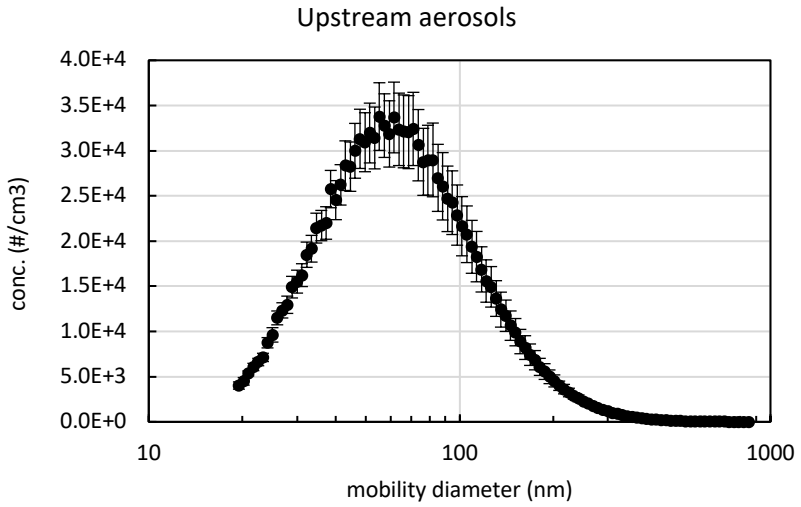
Filter Material

Manufacturer:	KN95 Silicone mask filter core
Identification:	MIT: 200527-MTM-FB-1
Description:	KN95 Oval Filter Fabric
Provider:	Make the Masks
Date of acquisition:	05/27/2020
Sample Area (cm^2):	3.8
Sample Thickness (mm):	0.47 ± 0.01
Sample Basis Weight (g/m^2):	175
Precondition details:	85% RH 22 hr
Number of layers:	1

Image of material (if available)

Test Aerosol

Model of instrument:	TSI 3475, TSI 3077S
Material:	0.5 wt% NaCl
Median Mobility Diameter (nm):	62.02 ± 1.44
Geometric STDV:	1.75 ± 0.00
Concentration (mg/m^3):	1.96 ± 0.31
Particle Number concentration (10^6#/cm^3)	1.30 ± 0.18

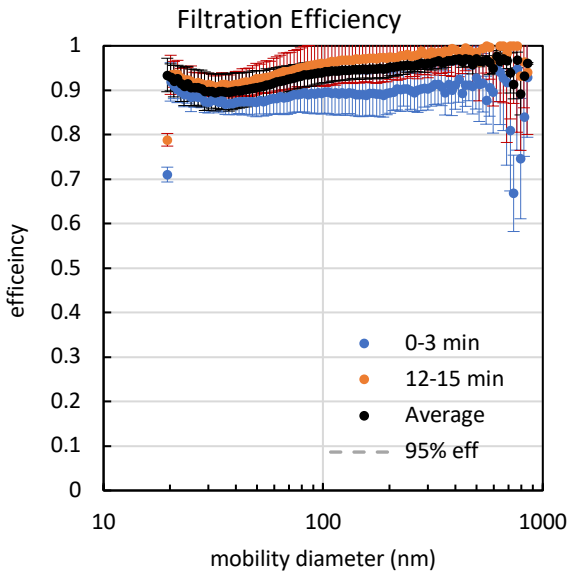


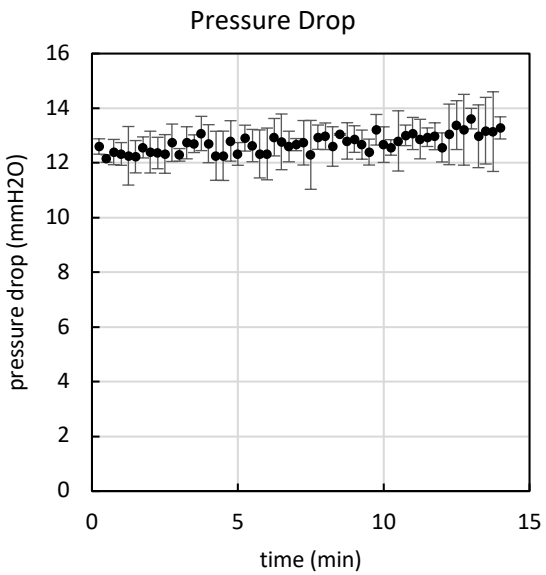
Test Conditions

Temperature (ºC):	22.0
Relative Humidity (%):	17.3
Flowrate (LPM):	2.20 ± 0.10
Duration (min):	15
Number of samples tested:	3

Filtration Performance

	Overall	Test #1	Test #2	Test #3
Initial resistance (mmH_2O):	12.4 ± 0.4	12.5	12.7	11.9
Initial efficiency (%):	88.5 ± 3.4	90.2	90.7	84.5





Minimum Filtration Efficiency (0 – 3 minutes)

Aerosol Median Diameter (nm)	Filtration Efficiency (mean)	Filtration Efficiency (STDV)	Aerosol Median Diameter (nm)	Filtration Efficiency (mean)	Filtration Efficiency (STDV)	Aerosol Median Diameter (nm)	Filtration Efficiency (mean)	Filtration Efficiency (STDV)
19.5	0.710	0.017	113.4	0.894	0.049	661.2	0.928	0.119
20.2	0.919	0.043	117.6	0.892	0.048	685.4	0.918	0.186
20.9	0.909	0.028	121.9	0.894	0.048	710.5	0.810	0.136
21.7	0.902	0.030	126.3	0.892	0.048	736.5	0.668	0.086
22.5	0.896	0.021	131	0.894	0.047	763.5	0.948	0.183
23.3	0.890	0.027	135.8	0.893	0.049	791.5	0.746	0.135
24.1	0.897	0.026	140.7	0.891	0.048	820.5	0.841	0.089
25	0.885	0.033	145.9	0.890	0.049	850.5	0.929	0.135
25.9	0.887	0.025	151.2	0.890	0.049			
26.9	0.885	0.021	156.8	0.889	0.047			
27.9	0.884	0.023	162.5	0.894	0.050			
28.9	0.875	0.024	168.5	0.893	0.051			
30	0.873	0.024	174.7	0.893	0.051			
31.1	0.878	0.024	181.1	0.892	0.051			
32.2	0.877	0.023	187.7	0.890	0.050			
33.4	0.873	0.024	194.6	0.894	0.049			
34.6	0.878	0.025	201.7	0.894	0.046			
35.9	0.870	0.024	209.1	0.896	0.041			
37.2	0.870	0.025	216.7	0.903	0.047			
38.5	0.870	0.025	224.7	0.902	0.049			
40	0.873	0.027	232.9	0.903	0.039			
41.4	0.874	0.026	241.4	0.903	0.050			
42.9	0.874	0.030	250.3	0.899	0.042			
44.5	0.875	0.029	259.5	0.895	0.043			
46.1	0.875	0.030	269	0.900	0.050			
47.8	0.874	0.032	278.8	0.903	0.049			
49.6	0.873	0.033	289	0.905	0.043			
51.4	0.877	0.030	299.6	0.903	0.048			
53.3	0.875	0.033	310.6	0.908	0.043			
55.2	0.878	0.034	322	0.913	0.045			
57.3	0.880	0.033	333.8	0.913	0.044			
59.4	0.882	0.036	346	0.907	0.042			
61.5	0.882	0.036	358.7	0.894	0.050			
63.8	0.886	0.038	371.8	0.914	0.043			
66.1	0.884	0.039	385.4	0.900	0.057			
68.5	0.885	0.039	399.5	0.912	0.054			
71	0.887	0.039	414.2	0.925	0.052			
73.7	0.891	0.040	429.4	0.894	0.043			
76.4	0.890	0.039	445.1	0.912	0.048			
79.1	0.892	0.041	461.4	0.912	0.036			
82	0.895	0.043	478.3	0.909	0.062			
85.1	0.891	0.043	495.8	0.928	0.071			
88.2	0.894	0.045	514	0.914	0.084			
91.4	0.893	0.046	532.8	0.917	0.066			
94.7	0.895	0.047	552.3	0.878	0.054			
98.2	0.893	0.046	572.5	0.907	0.065			
101.8	0.897	0.048	593.5	0.897	0.093			
105.5	0.896	0.048	615.3	0.956	0.082			
109.4	0.893	0.048	637.8	0.941	0.118			

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Equipment Diagram (ref: Chattopadhyay et al., J. Mater. Sci. 2016 51:204-217):