

Initial Testing of Filtration Efficiency

Updated November 13, 2020

Data obtained using Particle Counter, comparing particle count inside box to outflow on downstream side of filter.

Note: Single run of each filter type.

Parameters: 30 s sample times used. 0.05 ft³ of air sampled.

Temperature: 63-65F, Humidity: 44.5-52%

Filters tested:

Jeremy Filter (Rectangular Cartridge, pleated filter)

Commercial N95

Skip Blue Cartridge (Rectangular, blue color, pleated filter)

2 Layer MERV 15

1 Layer MERV15

Surgical Mask (disposable)

Random BMS Mask

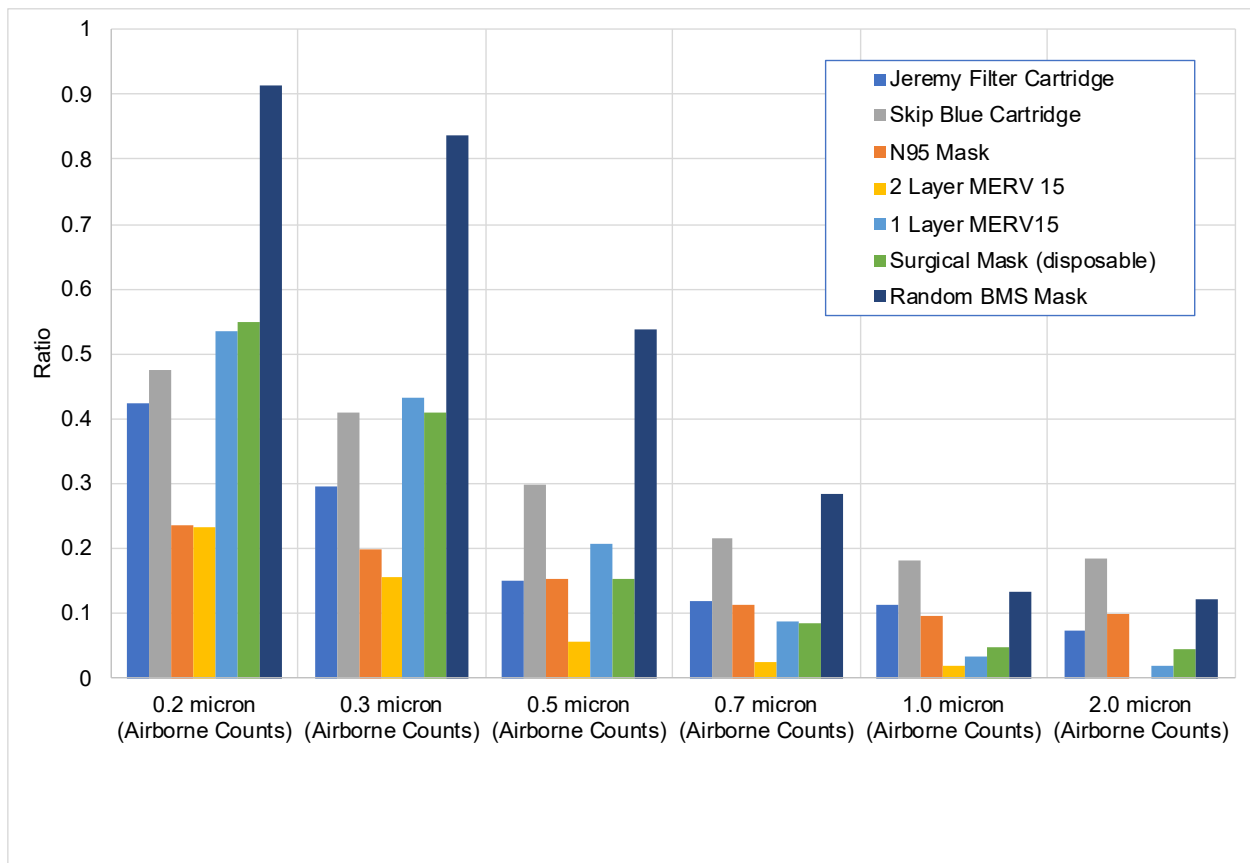


Figure 1. Ratio of particle count inside to particle count in outflow with vacuum running. Lower ratio means better filtration.

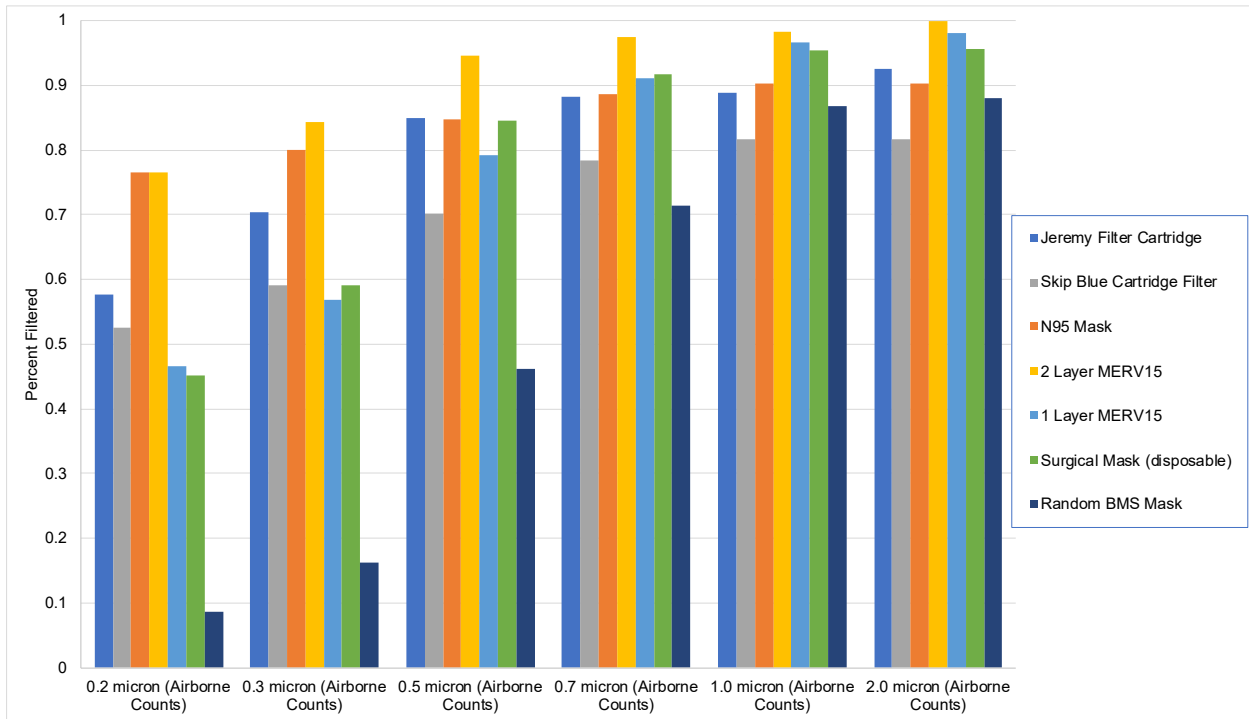


Figure 2. % of particles inside filtered ($C_{in}-C_{out}/C_{in}$). Higher percent filtered in better.

Comparison of differential pressure measurements:

Filter	Diff Pressure (kPa)
Jeremy Filter	0.37
Commercial N95 Mask	0.41
Skip Blue Cartridge	0.31
2 Layer MERV 15	0.65
1 Layer MERV15	0.35
Surgical Mask (disposable)	0.48
Random BMS Mask	0.33

For Differential Pressure tests, higher values mean harder to breathe through. Commercial N95 mask is potentially lower than expected because of the difficulty getting the mask to have a tight fit on PVC pipe (could be some leakage).