

MICROBIOLOGY REPORT



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Date: August 17, 2020
Test Type: Viral Single-Pass Efficiency

Test Requested by: Genesis
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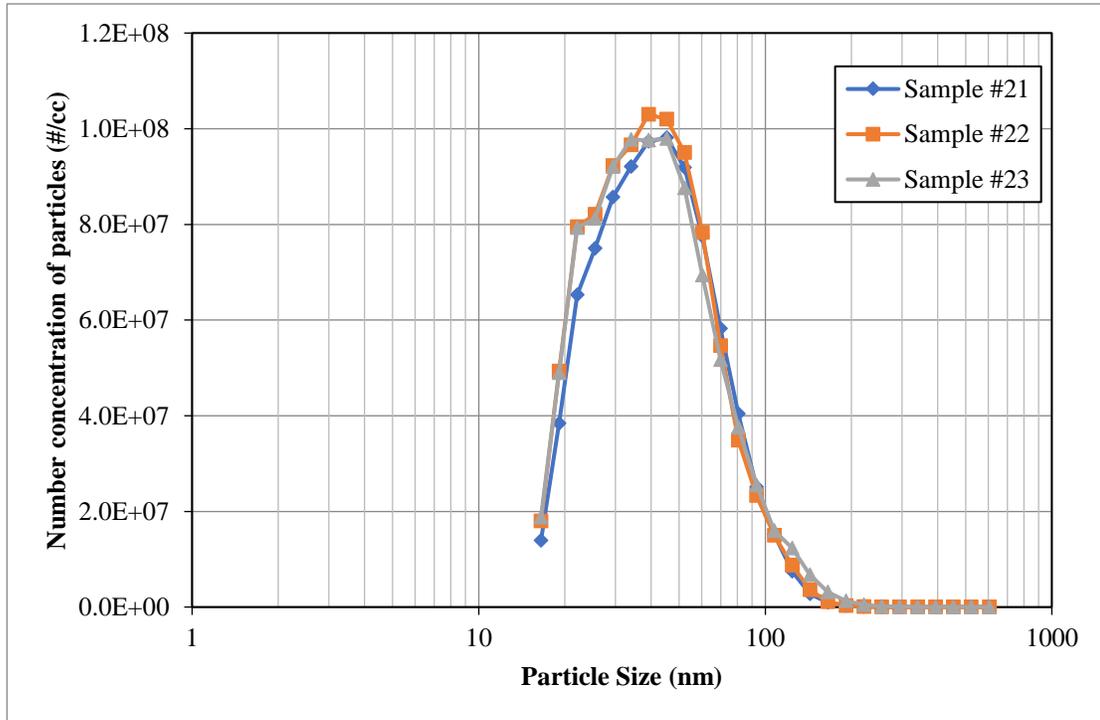
Scope

1 device and 2 Pre-filters submitted by Genesis Air for single-pass efficiency testing with MS-2 bacteriophage (ATCC 15597-B1) as the challenge organism.

Method

The single-pass efficiency tests were conducted in a horizontal ASHRAE 52.2 stainless-steel test duct with a cross-sectional dimension of 24"x24". The tests were performed under positive pressure with a blower pushing air through the filter and removal device. The test system airflow for all 24"x24"x2" and 4" filters were 1180, 1496 and 1968 corresponding to test air velocity of 295, 374 and 492 fpm.

Organism were grown on appropriate media, harvested, and resuspended in saline to 5×10^6 pfu/ml. Suspensions of the organisms were then aerosolized into the test duct using a nebulizer situated 8-feet upstream of the test filter. While the challenge aerosol was injected into the test duct, both upstream and downstream air samples were taken using SKC Bio-Stage cascade impactors for 5-minutes at calibrated sampling rates of 28 liters/min. This was repeated few times to collect statistically valid number of organisms. Also, SKC impinger were utilized to collect samples when high concentrations of challenge organisms were used for testing.



Particle size distribution of challenge virus



Prefilter



Filter with UV lights

Data:

| Device + | Upstream cfus | Downstream cfus | Efficiency |
|------------|---------------|-----------------|------------|
| MPA8-24244 | 43200 | 302 | 99.3% |
| MPA9-24244 | 43200 | 362 | 99.2% |
| | | | |

Test data for 1180 cfm (295 fpm)

| Device + | Upstream cfus | Downstream cfus | Efficiency |
|------------|---------------|-----------------|------------|
| MPA8-24244 | 34800 | 125 | 99.6% |
| MPA9-24244 | 34800 | 206 | 99.4% |
| | | | |

Test data for 1496 cfm (374 fpm)

| Device + | Upstream cfus | Downstream cfus | Efficiency |
|------------|---------------|-----------------|------------|
| MPA8-24244 | 27000 | 70 | 99.7% |
| MPA9-24244 | 27000 | 121 | 99.6% |
| | | | |

Test data for 1968 cfm (492 fpm)