



Report For: Dorma Lab
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Laboratory #: 841243-20
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Attention: Dr. Rene Caissie
Specimen: #1: Filtration Media

TEST REPORT

One specimen, consisting of filtration media, was submitted to be tested for bacterial filtration efficiency to determine acceptability for barrier classification under ASTM F2100-19 requirements.

Note: This report ONLY contains results for one of the five requirements as per ASTM F2100-19. Unless all the tests are performed, final overall performance level cannot be achieved for the submitted sample.

Medical Face Mask Material Requirements

Characteristic	Level 1 Barrier	Level 2 Barrier	Level 3 Barrier	Summary Results
Bacterial Filtration Efficiency, %	≥95	≥98	≥98	Pass Any Level
Differential Pressure, mm H ₂ O/cm ²	<5.0	<6.0	<6.0	Not Performed
Sub-Micron Particulate Filtration Efficiency at 0.1 micron, %	≥95	≥98	≥98	Not Performed
Synthetic Blood Penetration minimum pressure in mmHg for pass result	80	120	160	Not Performed
Flame Spread	Class 1	Class 1	Class 1	Not Performed
OVERALL PERFORMANCE LEVEL	Incomplete			

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Per Stephen Brown
Authorized By Stephen Brown
Per Derek Wild
Technician, Derek Wild



BACTERIA FILTRATION EFFICIENCY (BFE)

Testing performed by GAP EnviroMicrobial Services Ltd., 1020 Hargrieve Road, Unit 14, London, Ontario, Canada, N6E 1P5

A Bacterial Filtration Efficiency (BFE) test was completed according to the procedure in ASTM F2101-19 to determine the filtration efficiency of test articles by comparing the bacterial control counts upstream of the test article to the bacterial counts recovered downstream. A suspension of *S. aureus* was aerosolized using a nebulizer and delivered to the test article at a constant rate with a target delivery rate of $1.7 \times 10^3 - 3.0 \times 10^3$ colony forming units (CFU) per test article with a mean particle size of $3.0 \pm 0.3 \mu\text{m}$. The aerosolized suspension was drawn through the test article which was clamped in a six stage Andersen air sampler, at a constant flow rate of 28.3 liters per minute (LPM), for collection on bacteriological agar plates.

Challenge Microbe: *Staphylococcus aureus* ATCC 6538

Test Side: Side undetermined, flat sheet

Area Tested: $\sim 38.5 \text{ cm}^2$

Flow Rate: 28.3 LPM

Test Article Conditioning: $85 \pm 5\%$ RH at $25.0 \pm 0.5^\circ\text{C}$ for a minimum of 4 hours

Challenge Level: 5.203×10^3 CFU

Mean Particle Size: $2.95 \mu\text{m}$

Note: A challenge level of $>3.0 \times 10^3$ CFU was accepted, as control plates remained in a countable range and particle size remained within limits for all controls.

Requirements ASTM F2100-19:

Bacteria filtration efficiency (%)

Level 1 Barrier: ≥ 95

Level 2 Barrier: ≥ 98

Level 3 Barrier: ≥ 98

RESULTS

Specimen #	Total CFU Recovered	Percent BFE (%)	Specimen (Pass/Fail)	FINAL RESULT
1-1	<1	>99.98	Pass	PASS Any Level
1-2	<1	>99.98	Pass	
1-3	<1	>99.98	Pass	
1-4	<1	>99.98	Pass	
1-5	<1	>99.98	Pass	

The filtration efficiency percentages were calculated using the following equation:

$$\% BFE = \frac{C - T}{C} \times 100$$

C = Challenge Level

T = Total CFU recovered downstream of test article