GUARDSMANGLOBAL.COM
(630) 788-1380

July 27, 2020

Below reports were provided from SGS Labs, verifying our mask as a Level 3, aside from one measure where we are certified as a Level 2 mask.

These are stated standards as outlined by ASTM.

| | ASTM **Level 1** | ASTM **Level 2** | ASTM **Level 3** | | **Sample 100 A** | |
|---|---|---|---|---|---|---|
| **Bacterial Filtration Efficiency (BFE) (%)** | ≥95 | ≥98 | ≥98 | | **99.93%** | **Level 3** |
| **Delta P Differential Pressure ΔP (mm $H_2O/cm^2$)** | <4.0 mm $H_2O$ | <5.0 mm $H_2O$ | <5.0 mm $H_2O$ | | **0.51 mm $H_2O/cm^2$** | **Level 3** |
| **Fluid Resistance (mm Hg)** | 80 mm Hg | 120 mm Hg | 160 mm Hg | | **Pass 120 mm Hg** | **Level 2** |
| **Flammability** | Class 1 | Class 1 | Class 1 | | **Class 1** | **Level 3** |

# MICROBIOLOGY REPORT

LMS Technologies, Inc.

6423 Cecilia Circle
Bloomington, Minnesota 55439 U.S.A.

Tel: (952)-918-9060
Fax: (952)-918-9061

Date: August 6,2020
Test Type: VFE (viral filtration efficiency) & BFE (bacterial filtration efficiency)
Requested by: Guardsman Global, Russel McAbery

Scope: Test provided for masks using Staph aureus (ATCC 6538). Testing was done based ASTM F2101 - 19 Standard Test Method for Evaluating the Bacterial Filtration Efficiency (BFE) of Medical Face Mask Materials, Using a Biological Aerosol of Staphylococcus aureus. We also tested the samples with MS-2 bacteriophage (ATTC 15597-B1) with the same protocol.

Method: Aerosolize organism into glove box and collect sample for 1 minute with Anderson Impactor. Pump is set 28.3 L/M

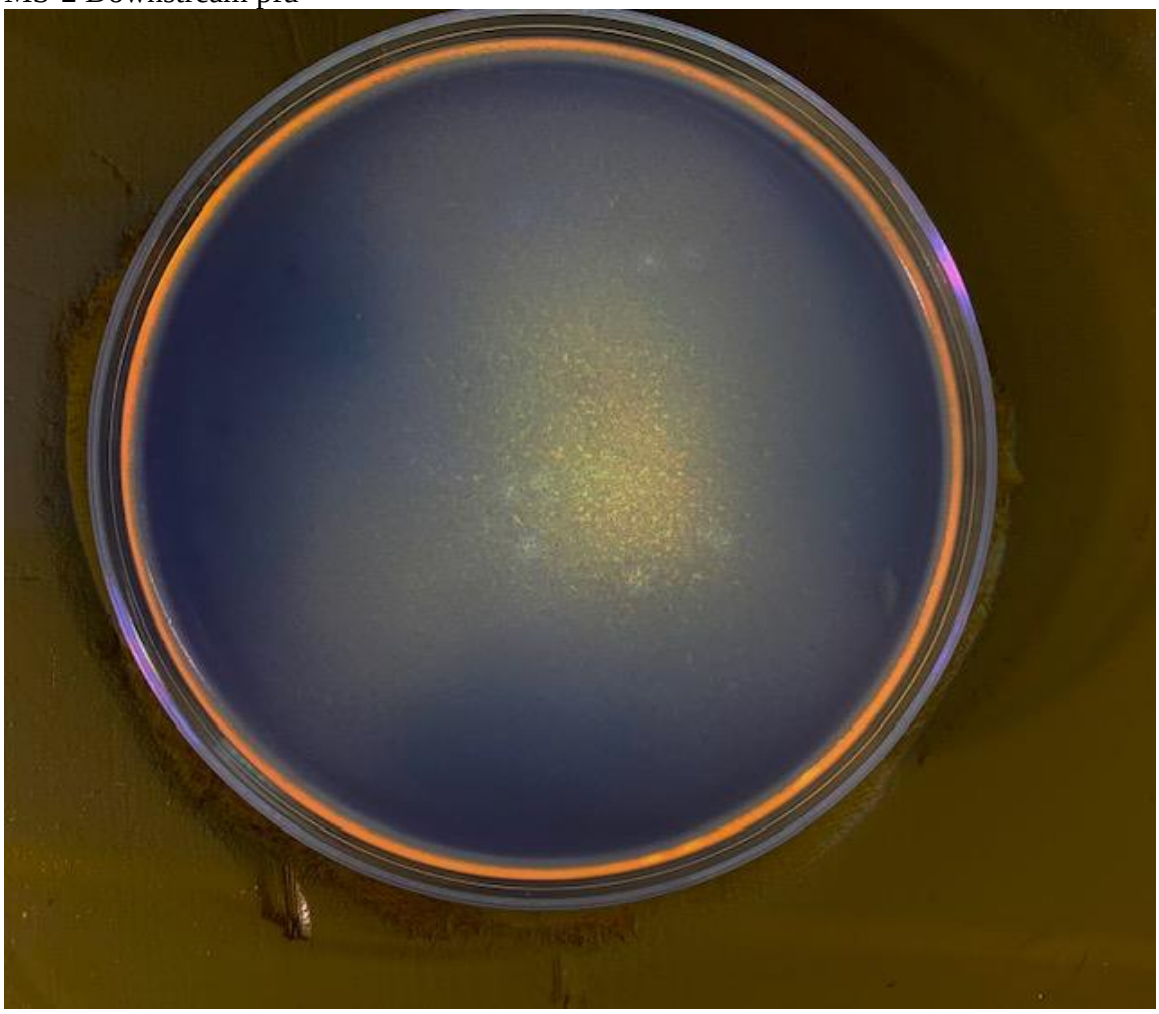
**Data:**

| | | Upstream | Downstream | Efficiency |
|---|---|---|---|---|
| VFE | | | | |
| MaskMedia | | 2.7E5 pfu | 32 pfu | 99.99% |
| | | | | |
| BFE | | | | |
| MaskMedia | | 2.7E5 cfu | 349 cfu | 99.87% |
| | | | | |

Microbiologist
John Cherne, Autumn Stivers-Biscuso

Testing Approval
Al Vatine,CEO

MS-2 Downstream pfu



Microbiologist
John Cherne, Autumn Stivers-Biscuso

Testing Approval
Al Vatine,CEO

Staph Downstream cfu

Microbiologist
John Cherne, Autumn Stivers-Biscuso

Testing Approval
Al Vatine,CEO

Nelson Labs
A Sotera Health company

# Latex Particle Challenge GLP Report

| | | |
|---|---|---|
| Test Article: | 05012020 | |
| Purchase Order: | PO-00303-PM | |
| Study Number: | 1301379-S01 | |
| Study Received Date: | 19 May 2020 | |
| Testing Facility: | Nelson Laboratories, LLC<br>6280 S. Redwood Rd.<br>Salt Lake City, UT 84123 U.S.A. | |
| Test Procedure(s): | Standard Test Protocol (STP) Number: | STP0005 Rev 07 |
| Deviation(s): | Quality Event (QE) Number(s): | QE22125 |

**Summary:** This procedure was performed to evaluate the non-viable particle filtration efficiency (PFE) of the test article. Monodispersed polystyrene latex spheres (PSL) were nebulized (atomized), dried, and passed through the test article. The particles that passed through the test article were enumerated using a laser particle counter.

A one-minute count was performed, with the test article in the system. A one-minute control count was performed, without a test article in the system, before and after each test article and the counts were averaged. Control counts were performed to determine the average number of particles delivered to the test article. The filtration efficiency was calculated using the number of particles penetrating the test article compared to the average of the control values.

The procedure employed the basic particle filtration method described in ASTM F2299, with some exceptions; notably the procedure incorporated a non-neutralized challenge. In real use, particles carry a charge, thus this challenge represents a more natural state. The non-neutralized aerosol is also specified in the FDA guidance document on surgical face masks. All test method acceptance criteria were met.

| | |
|---|---|
| Test Side: | Inside |
| Area Tested: | 91.5 $cm^2$ |
| Particle Size: | 0.1 µm |
| Laboratory Conditions: | 20°C, 30% relative humidity (RH) at 0705; 21°C, 31% RH at 0926 |
| Average Filtration Efficiency: | 99.83% |
| Standard Deviation: | 0.042 |

ilac-MRA ANAB ACCREDITED ISO/IEC 17025 TESTING LABORATORY

Sarah Guzman electronically approved — 08 Jul 2020 16:25 (+00:00)

Study Director Sarah Guzman — Study Completion Date and Time

**Deviation Details:** Controls and sample counts were conducted for one minute instead of an average of three one minute counts. This change shortens the total test time for each sample but will still provide an accurate determination of the particle counts. An equilibrate is a dwell period where the challenge is being applied to the test article for a certain period of time before test article counts are counted. The equilibrate period was reduced from 2 minutes to a minimum of 30 seconds which is sufficient time to clear the system of any residual particles, and establish a state of stable equilibrium before sample counts are taken. Test method acceptance criteria were met, results are valid.

**Results:**

| Test Article Number | Test Article Counts | Average Control Counts | Filtration Efficiency (%) |
|---|---|---|---|
| 1 | 18 | 12,575 | 99.86 |
| 2 | 19 | 12,432 | 99.85 |
| 3 | 24 | 12,710 | 99.81 |
| 4 | 31 | 13,093 | 99.76 |
| 5 | 18 | 13,250 | 99.86 |

**Test Method Acceptance Criteria:** Ambient background particles detected through the test system must be below 1% of the challenge total (<100 particles).

**Procedures:**

Test Set-up: Testing was conducted in an ISO Class 5 (class 100) HEPA filtered hood. The inlet air to the test system was filtered through a 0.2 µm rated air filter. The particle generator outlet was clamped off and the number of background particles within the test system was verified to be <100 particles at 1 cubic foot per minute (CFM). The flow rate through the test system was maintained at 1 CFM ± 5%.

An aliquot of the PSL was aerosolized using a particle generator, mixed with additional filtered air, dried and passed through the test system. The particles delivered were enumerated using a laser based particle counter.

Test Procedure: A test article was placed into the holder and the system was allowed to stabilize. The number of particles being delivered to the test article was determined (no medium in air stream) as one-minute control readings were taken prior to and after every test article. Control count averages were maintained at a level of 10,000-15,000 particles per cubic foot. One-minute counts were recorded for the test article between the control counts.

The PFE of each test article was determined by using the following equation:

$$\% PFE = \frac{C - T}{C} x\ 100$$

Where: C = Combined average of the control counts
T = Average test article counts

# Quality Assurance Statement

**Compliance Statement:** The test was conducted in accordance with the USFDA (21 CFR Parts 58, 210, 211, and 820) Regulations. This final report reflects the raw data.

| Activity | Date |
|---|---|
| Study Initiation | 03 Jun 2020 |
| Phase Inspected by Quality Assurance: Latex Test | 11 Jun 2020 |
| Audit Results Reported to Study Director | 15 Jun 2020 |
| Audit Results Reported to Management | 16 Jun 2020 |

| Scientists | Title |
|---|---|
| Benjamin Sipes | Supervisor |
| Sarah Guzman | Study Director |
| Denise Anderson | Scientist |
| Chris Acker | Scientist |

**Data Disposition:** The study plan, raw data and final report from this study are archived at Nelson Laboratories, LLC or an approved off-site location.

Nicole Widmer electronically approved
Quality Assurance

08 Jul 2020 16:24 (+00:00)
Date and Time