

## Microbial Cleanliness (Bioburden) of Medical Masks Final Report

Test Article: Face Mask 20191017CG  
 Study Number: 1235897-S01  
 Study Received Date: 29 Oct 2019  
 Testing Facility: Nelson Laboratories, LLC  
 6280 S. Redwood Rd.  
 Salt Lake City, UT 84123 U.S.A.  
 Test Procedure(s): Standard Test Protocol (STP) Number: STP0036 Rev 15  
 Customer Specification Sheet (CSS) Number: 201905488 Rev 01  
 Deviation(s): None

**Summary:** The testing was conducted in accordance with EN 14683:2019, with the exception of approximate volumes of eluent used when performing the extraction procedure and a temperature range of 30-35°C used for aerobic incubation.

When bioburden results are calculated using a software program, manual calculations may differ slightly due to rounding. The counts determined on products are colony forming units and may not always reflect individual microorganisms. The sponsor performs any statistical analysis and determines the acceptable limits. Testing was performed in compliance with US FDA good manufacturing practice (GMP) regulations 21 CFR Parts 210, 211 and 820.

### Results:

| Unit Number         | Weight (g)       | Aerobic | Fungal | Total Bioburden (CFU/mask) | Total Bioburden (CFU/g) |
|---------------------|------------------|---------|--------|----------------------------|-------------------------|
| 1                   | 3.2              | <3      | <3     | <6.1                       | <1.9                    |
| 2                   | 3.3              | <3      | <3     | <5.9                       | <1.8                    |
| 3                   | 3.2              | <3      | <3     | <5.9                       | <1.9                    |
| 4                   | 3.2              | <3      | <3     | <6.1                       | <1.9                    |
| 5                   | 3.3              | <3      | <3     | <5.9                       | <1.8                    |
| Recovery Efficiency | UTD <sup>a</sup> |         |        |                            |                         |

Note: The results are reported as colony forming units (CFU) per mask.

< = No Organisms Detected

UTD = Unable to Determine

<sup>a</sup> UTD due to zero count on the first rinse. An alternative method or inoculated product recovery efficiency is recommended.



Robert Putnam electronically approved  
Study Director

Robert Putnam

15 Nov 2019 20:29 (+00:00)  
Study Completion Date and Time

Method Suitability:

| Organism                   | Percentage |
|----------------------------|------------|
| <i>Bacillus atrophaeus</i> | 100%       |

**Test Method Acceptance Criteria:** If applicable, anaerobic controls are acceptable for the bioburden test results. The number of masks to be tested shall be a minimum of 5 or more to meet an acceptable quality level of 4%. The bioburden of the medical mask shall be < 30 CFU/g tested.

**Procedure:**

- Positive Controls/Monitors: *Bacillus atrophaeus*
- Extract Fluid: Peptone Tween®
- Extract Fluid Volume: ~300 mL
- Extract Method: Orbital Shaking for 15 minutes at 250 rpm
- Plating Method: Membrane Filtration
- Agar Medium: Potato Dextrose Agar  
Tryptic Soy Agar
- Recovery Efficiency: Exhaustive Rinse Method
  - Aerobic Bacteria: Plates were incubated 3 days at 30-35°C, then enumerated.
  - Fungal: Plates were incubated 7 days at 20-25°C, then enumerated.