

## Latex Particle Challenge Final Report

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Test Article: GRACE 3PLY EARLOOP FACE MASK  
Study Number: 1345610-S01  
Study Received Date: 24 Sep 2020  
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: STP0005 Rev 08  
Deviation(s): None

**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. 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. During testing and controls, the air flow rate is maintained at 1 cubic foot per minute (CFM)  $\pm$  5%.

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. Testing was performed in compliance with US FDA good manufacturing practice (GMP) regulations 21 CFR Parts 210, 211 and 820.

Test Side: Inside  
Area Tested: 91.5 cm<sup>2</sup>  
Particle Size: 0.1  $\mu$ m  
Laboratory Conditions: 21.5°C, 22% relative humidity (RH) at 0848; 21.2°C, 22% RH at 0956  
Average Filtration Efficiency: 99.0%  
Standard Deviation: 0.09



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David Brown electronically approved for  
Study Director

Curtis Gerow

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11 Nov 2020 05:44 (+00:00)  
Study Completion Date and Time

**Results:**

Test Article Number	Test Article Counts	Average Control Counts	Filtration Efficiency (%)
1	120	11,388	98.9
2	113	11,606	99.03
3	117	12,110	99.03
4	113	13,052	99.13
5	147	13,181	98.9