

## Bacterial Filtration Efficiency (BFE) at an Increased Challenge Level Final Report

Test Article: MEO X  
Study Number: 1067190-S01C.1 Amended  
Study Received Date: 28 Jun 2018  
Study Completion Date: 18 Jul 2018  
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: STP0009 Rev 10  
Deviation(s): None

**Summary:** This test procedure was performed to evaluate the BFE of test articles at an increased challenge level. A suspension of *Staphylococcus aureus*, ATCC #6538, was delivered to the test article at a challenge level of greater than  $10^6$  colony forming units (CFU). The challenge was aerosolized using a nebulizer and delivered to the test article at a fixed air pressure and flow rate of 30 liters per minute (LPM). The aerosol droplets were generated in a glass aerosol chamber and drawn through the test article into all glass impingers (AGIs) for collection. The challenge was delivered for a one minute interval and sampling through the AGIs was conducted for two minutes to clear the aerosol chamber. The mean particle size (MPS) control was performed at a flow rate of 28.3 LPM using a six-stage, viable particle, Andersen sampler for collection.

This test procedure was modified from Nelson Laboratories, LLC (NL), standard BFE procedure in order to employ a more severe challenge than would be experienced in normal use. This method was adapted from ASTM F2101. 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.

Challenge Flow Rate: 30 LPM  
Area Tested: ~40 cm<sup>2</sup>  
Side Tested: Side Facing Up in Bag  
Challenge Level:  $3.3 \times 10^6$  CFU  
MPS: ~2.9  $\mu$ m  
Test Monitor Results: Acceptable

Study Director



Janelle R. Bentz, M.S.

Amended Report Date





1067190-S01

**Results:**  
**MEO X:**

Test Article Number	Total CFU Recovered	Filtration Efficiency (%)
1	$7.6 \times 10^2$	99.977
2	$5.0 \times 10^2$	99.985
3	$5.9 \times 10^2$	99.982

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 the test article

**Amendment Justification:** At the request of the sponsor, results were separated in to reports organized per sample ID.