

Health-Mor

EFFICACY TEST REPORT

SCOPE OF WORK

Non-standardized Test Method: Microbial Reduction Rate Test

PRODUCT – Air purification unit

MODEL – Defender filter queen

REPORT NUMBER

104868700COL-002

ISSUE DATE

11/30/21

PAGES 5

DOCUMENT CONTROL NUMBER

GFT-OP-10h (6-July-2017)

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SECTION 1 EFFICACY STUDY SUMMARY

Client		Health-Mor 13325 Darice Pkwy Strongsville, OH 44149-3819 USA
Project No.		G104868700
Sample	Product	Air purification unit
	Model	Defender filter queen
Procedural	Engineer	Amanda Mastronicolas
	Reviewer	Nicholas Unger
	Dates Tested	11/22/21 – 11/24/21
	Report Date	11/30/2021
Standard	Non-standardized Test Method: Microbial Reduction Rate Test	
Testing Facility	Intertek Microbiological Laboratory 1717 Arlingate Ln. Columbus, OH 43228 United States	

SECTION 2 TEST PROCEDURE

The test chamber measured 10’x10’x10’ (1000 cubic ft) room and a microbial suspension was aspirated into the chamber. Air samples were taken from the test chamber once the unit was turned on and sampling was taken every 15 minutes over a period of 2 hours, and then plated. The process was then repeated without the test unit in the chamber to provide the natural decay results. All plates were incubated overnight and viral growth on the test plate was compared to that of the natural decay control.

Air sampling took place using an SKC BioStage Single-stage impactor for 30 seconds at 12L/min (.424 cubic feet/min). Results below represent the percent reduction at 90 minutes.

SECTION 3 ORGANISMS

Organism Name	Organism Type	ATCC Number	Source
MS2 bacteriophage	small, non-enveloped RNA virus	15597-B1	ATCC

SECTION 3 EQUIPMENT

Equipment Type	Equipment No.	Calibration Due Date
Micropipette	CE 2587	06/30/2022
Incubator	CE 2381	7/7/2022
Balance	CE 1882	7/7/2022
Autoclave	CE 2376	Verify Before Use
Centrifuge	CE 2382	For Reference Only
Chamber	CE 1149	For Reference Only
Collision Nebulizer	CE 1139	For Reference Only
Refrigerator	CE 1157	For Reference Only
Pump	CE 1137	For Reference Only
Stopwatch	SW013	9/9/2022
Ambient Temperature/RH	CE 1179	For Reference Only

SECTION 4 MEDIA AND REAGENTS

Type	Manufacturer	Lot No	Expiration Date
Nutrient Agar	DIFCO	9346039	10/31/2024
PBS	Fisher	192736	08/01/2022

SECTION 5 SAMPLE ACQUISITION

Acquisition method	Shipped to Intertek
Description	Air Purifier Unit
Model Number	Defender filter queen
Arrival date	11/15/2021
Condition	New
Sample Identification No.	COL2111150955-001
Development Level	Production
Sample Photo	

SECTION 6 SUMMARY OF RESULTS

Air Flow	Optional Features
Max Speed per unit	N/A

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ANTIMIROBIAL EFFICACY TEST REPORT

HEALTH-MOR
Report No.: 104868700COL-002

Organism Type	Virus
Temperature Min/Max	18°C (66°F)
Humidity Min/Max	41 % RH
Organism Name	MS2
Percent Reduction (90 Mins)	99.9%
Log Reduction (90 Mins)	3.0

Completed by:	Amanda Mastronicolas	Reviewed by:	Nicholas Unger
Title:	Microbiology, Team lead	Title:	Staff Engineer
Signature:		Signature	
Date	30-NOV-2021	Date:	30-Nov-2021

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Health-Mor

TEST REPORT

SCOPE OF WORK

AATCC Test Method 100: Assessment of Antibacterial Finishes on Textile Materials (2019)

PRODUCT:

Filter

REPORT NUMBER

104868770COL-003

ISSUE DATE

30-December-2021

Revision date

30-December-2021

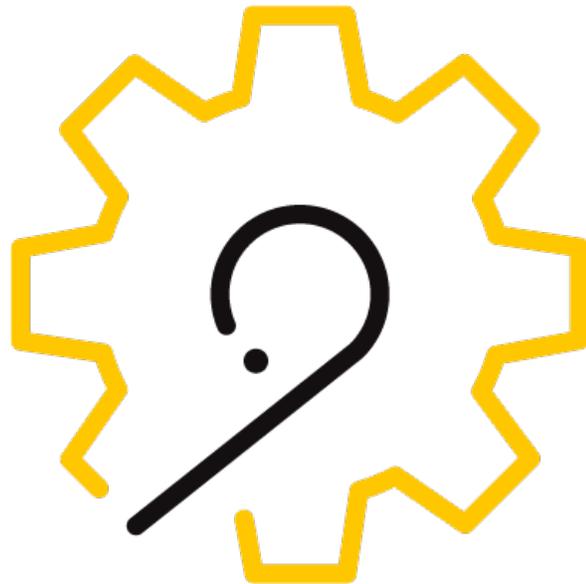
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MICROBIOLOGICAL PERFORMANCE TEST REPORT

Client		Health-Mor 13325 Darice Pkwy Strongsville, OH 44149-3819 USA
Project No.		G104868770
Sample	Product	Filter for Defender, filter queen air purifier
	Identification No.	COL2111150951-001-002
	Date Received	11/15/21
	Condition	Used
	Production or Prototype	Production
Procedural	Engineer	Amanda Mastronicolas
	Reviewer	Nicholas Unger
	Dates Tested	December 28,2021-December 29,2021
	Report Date	December 30, 2021
Standard	AATCC Test Method 100: Assessment of Antibacterial Finishes on Textile Materials (2019)	

Sample Prep: Samples were infected with 1 mL of MS2 in a marked area. The filter then was reinstalled into the “Defender filter queen air purifier” and the unit was set on high speed. The unit ran for 24 hours then the filter was removed. The filter was then cut and weighed to achieve 1 gram of sample. Once the filter was weighed it was recovered in neutralizing broth and diluted out to be plated.

Test Prep:

A 1:500 nutrient broth: Sterile Distilled Water was used for inoculum dilution with 0.05% of Tween 20. Twenty mL of sterile D/E was used as a neutralizing broth.

Organism	ATCC No	Initial Concentration
MS2 bacteriophage	15597-B1	6.1x10 ⁸ pfu/mL

The percent reduction in the Result Table below is the bacterial reduction between the number of bacteria recovered from an untreated control and the number of bacteria recovered from the test sample after the 24-hour incubation period.

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MICROBIOLOGICAL PERFORMANCE TEST REPORT

Result Table:

Sample	MS2 % Reduction
Health-mor filter 24 hours	95.29%

Test Performed by:

Signature on file

Amanda Mastronicolas
Microbiology Team lead
Columbus Office

Report Approved by:

Signature on file

Nicholas Unger
Lead Engineer
Columbus Office

<u>Date / Project Number</u>	<u>Engineer / Reviewer</u>	<u>Pages</u>	<u>Description of Change</u>
<u>12/30/21</u> <u>G104868770</u>	<u>A. Mastronicolas</u> <i>AM</i> <u>N.Unger</u> <i>NTU</i>	<u>All</u>	Updated the results table to say 24 hours instead of 12 hours.