FINAL REPORT

Efficacy Testing of Mobile Outfitters Pruvia 360 Antimicrobial Film (Rev May 2020)

PROTOCOL
JIS Z 2801:2000

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EMSL Analytical, Inc.

Certificate of Analysis

Client: Mobile Outfitters

Project: Product Efficacy on Bacteria

Product: Mobile Outfitters Pruvia 360 Antimicrobial Film (Rev May 2020)

Sample received: 04/27/2020
Start date: 05/05/2020
Report date: 05/13/2020
Challenge Bacteria: Gram Negative – *Escherichia coli* (8739)

Gram Positive – *Staphylococcus aureus* (ATCC 6538)

Experimental Summary: The testing procedure was designed after discussions between EMSL Analytical, the testing company, and the client. The testing procedure is based on JIS Z 2801:2000, with the testing conducted on a 3cm x 3cm cut of a treated and untreated film sheets material for its ability to reduce bacteria on its surface (disinfect). The testing was conducted in our Wallingford, CT Microbiology Laboratory.

Procedure:

Preparation of Bacteria – A 10µL transfer loop was used to transfer the bacteria from stock culture to a fresh Tryptic Soy Agar (TSA) plate. This plate was incubated at 35°C for 24 h. After incubation a bacterial suspension was prepared for each of the bacteria by taking one 10µL loop of the test bacteria into 10 mL of 1/500 dilute Nutrient Broth (NB) until a 10^5 solution of cells was created.

Inoculation of Test Pieces – Six test pieces and nine control pieces were separately placed into sterile Petri dishes per bacteria type. They were each inoculated with 0.4 mL of the test inoculum and then covered with a film to evenly distribute the test inoculum. The lid was placed onto each Petri dish and three test pieces and three control pieces per bacteria type were then placed into an incubator set to 35°C for 0 hour and 24 hours. The other three control pieces were immediately prepped by placing the covering film and the test piece in a stomacher bag, followed by the addition of 10 mL of Tryptic Soy Broth (TSB). The bag was kneaded by hand for one minute. Afterwards serial dilutions were made by taking 1 mL of the TSB solution and adding it to 9 mL of Phosphate buffer. This was repeated until the appropriate dilutions were made. One mL of each dilution was then placed into an empty sterile Petri dish in duplicates before

15 mL of Tryptic Soy Agar (TSA) was added. After the agar solidified each plate was incubated at 35°C for 24 h before colonies were counted. This was repeated for the six test pieces and six control pieces after having been incubated 35°C for one hour and 24 hours. After colonies were counted results and statistics were calculated.

Experimental Results:

Table 1.1: Bactericidal efficacy of antimicrobial film materials on *E. coli*

Sample	Time	Avg. CFU	Log Reduction	%Reduction	Antimicrobial Activity
Starting Population	0	4.80 x10^5	NA		
Untreated Material (Control)	1 hour	1.90 x10^5	NA		
	24 hours	4.30 x10^5			
Treated Material	1 hour	2.83 x10^5	4.45	>99.99 %	0.34
	24 hours	<10			4.63

Table 1.2: Bactericidal efficacy of antimicrobial film materials on *S. aureus*

Sample	Time	Avg. CFU	Log Reduction	%Reduction	Antimicrobial Activity
Starting Population	0	3.00 x10^5	NA		
Untreated Material (Control)	1 hour	2.26 x10^5	NA		
	24 hours	33			
Treated Material	1 hour	1.94 x10^5	4.29	>99.99 %	0.52
	24 hours	<10			1.04

Conclusions/Observations:

The purpose of this study was to determine the bactericidal efficacy of the antimicrobial film materials against *S. aureus* and *E. coli*. The test material demonstrated a >2 log reduction of *S. aureus* and *E. coli*. In conclusion, the test material was observed to disinfect (kill) *S. aureus and E. coli* with a >99% reduction.

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