FINAL REPORT (ECRLTX2023-0009-01)
Queenan Laboratories, LLC
Attn. Mark Queenan, President
Date of Report: 13MAR2023
Antimicrobial Effectiveness Test

PRODUCT
QL 550 - 1. All Surface Cleaner

PURPOSE
The purpose of this study was to evaluate the effectiveness of antimicrobial preservatives against microbial contamination.

STUDY DATES
This study was initiated on 31 JAN 2023 and was completed on 06 MAR 2023.

TEST METHOD
The method employed was USP 42, Section 51, Antimicrobial Effectiveness Testing.

TEST ORGANISMS

1. *Staphylococcus aureus*	ATCC#6538
2. *Escherichia coli*	ATCC#8739
3. *Pseudomonas aeruginosa*	ATCC#9027
4. *Candida albicans*	ATCC#10231
5. *Aspergillus brasiliensis*	ATCC#16404

RESULTS

Log_{10} CFU/g or CFU/ml

QL 550 - 1. All Surface Cleaner	*Staphylococcus aureus*	*Escherichia coli*	*Pseudomonas aeruginosa*	*Candida albicans*	*Aspergillus brasiliensis*
Inoculum Level	5.90	5.79	5.82	5.99	4.60
Day 14	<1.71	<1.71	<1.71	<1.71	<1.70
Day 28	<1.71	<1.71	<1.71	<1.71	<1.70

Suitability of Counting Method Validation*

	Product Dilution	*Staphylococcus aureus*	*Escherichia coli*	*Pseudomonas aeruginosa*	*Candida albicans*	*Aspergillus brasiliensis*
Inert Control	N/A	57.5	43.5	60	75.5	6.5
QL 550 - 1. All Surface Cleaner	10^{-1}	86.5	57.5	70	96	8.5
	10^{-2}					

**Suitability of the counting method is confirmed when recovery of the test organisms in the sample is at least 50% of that of the control. Test product dilutions past 10^{-1} not reported where acceptable recovery is demonstrated on the 10^{-1} dilution.*

ACCEPTANCE CRITERIA
For category 2 products, the preservative is effective in the sample examined if a) the concentrations of viable bacteria demonstrate no less than a 2.0 log reduction from the initial count at 14 days and no increase from the day 14 count at 28 days; and b) the concentrations of viable yeast and molds demonstrate no increase from the initial calculated count at 14 and 28 days.

CONCLUSION
The test material, QL 550 - 1. All Surface Cleaner, conforms to the acceptance criteria for USP 42 <51> category 2 products.

Authorized Signature:

Olivia Wilde
Digitally signed by Olivia Wilde
Date: 2023.03.13 14:47:44 -05'00'

Olivia Wilde, B.A., Senior Team Lead, Microbiology

FINAL REPORT (ECRLTX2023-0009-02)
Queenan Laboratories, LLC
Attn. Mark Queenan, President
Date of Report: 13MAR2023
Antimicrobial Effectiveness Test

PRODUCT
QL550 - 2. All Surface Cleaner

PURPOSE
The purpose of this study was to evaluate the effectiveness of antimicrobial preservatives against microbial contamination.

STUDY DATES
This study was initiated on 31 JAN 2023 and was completed on 06 MAR 2023.

TEST METHOD
The method employed was USP 42, Section 51, Antimicrobial Effectiveness Testing.

TEST ORGANISMS
1. *Staphylococcus aureus* ATCC#6538
2. *Escherichia coli* ATCC#8739
3. *Pseudomonas aeruginosa* ATCC#9027
4. *Candida albicans* ATCC#10231
5. *Aspergillus brasiliensis* ATCC#16404

RESULTS

Log_{10} CFU/g or CFU/ml

QL550 - 2. All Surface Cleaner	*Staphylococcus aureus*	*Escherichia coli*	*Pseudomonas aeruginosa*	*Candida albicans*	*Aspergillus brasiliensis*
Inoculum Level	5.90	5.79	5.82	5.99	4.60
Day 14	<1.71	<2.71	<1.71	<1.71	<1.70
Day 28	<1.71	<2.71	<1.71	<1.71	<1.70

Suitability of Counting Method Validation*

	Product Dilution	*Staphylococcus aureus*	*Escherichia coli*	*Pseudomonas aeruginosa*	*Candida albicans*	*Aspergillus brasiliensis*
Inert Control	N/A	57.5	43.5	60	75.5	6.5
QL550 - 2. All Surface Cleaner	10^{-1}	72.5	0	59	126	7
	10^{-2}		51.5			

**Suitability of the counting method is confirmed when recovery of the test organisms in the sample is at least 50% of that of the control. Test product dilutions past 10^{-1} not reported where acceptable recovery is demonstrated on the 10^{-1} dilution.*

ACCEPTANCE CRITERIA
For category 2 products, the preservative is effective in the sample examined if a) the concentrations of viable bacteria demonstrate no less than a 2.0 log reduction from the initial count at 14 days and no increase from the day 14 count at 28 days; and b) the concentrations of viable yeast and molds demonstrate no increase from the initial calculated count at 14 and 28 days.

CONCLUSION
The test material, QL550 - 2. All Surface Cleaner, conforms to the acceptance criteria for USP 42 <51> category 2 products.

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