



Interface Research and Development
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Lab Log # M14-189

Microbiology Laboratory Report

To: CLEANER SOLUTIONS
From: Daniel Price, Ph.D., Brandi Prestridge and Madison Brasselle
Date: 13 NOV 2014
Re: ASTM 2149 Test of Pillow Case Samples Treated with Silane Quat Chemistry (MICROSTATIC)

Introduction:

Pillowcase fabric sample was submitted for antibacterial activity against *E. coli*, *Staphylococcus aureus* and *Staphylococcus aureus* (MRSA).

Materials and Methods:

ASTM 2149-12 was used to quantitatively assess the antibacterial activity of these samples. Three challenge bacteria were specified; *E. coli* ATCC 25922, *Staphylococcus aureus* ATCC 6538 and *Staphylococcus aureus* (MRSA) ATCC 43300. The contact time specified was 24 hours.

Results:

E. coli ATCC 25922

Sample	Avg. 24 hr Control CFU	Avg. 24 hr Treated CFU	Log Reduction	Percent Reduction
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Sample	Avg. 24 hr Control CFU	Avg. 24 hr Treated CFU	Log Reduction	Percent Reduction
Pillow Case Fabric	8.0×10^5	$<1.0 \times 10^2$	3.93	99.98

Staphylococcus aureus ATCC 6538

Sample	Avg. 24 hr Control CFU	Avg. 24 hr Treated CFU	Log Reduction	Percent Reduction
Pillow Case Fabric	6.0×10^5	$<1.0 \times 10^2$	3.82	99.98

Staphylococcus aureus (MRSA) ATCC 43300

Sample	Avg. 24 hr Control CFU	Avg. 24 hr Treated CFU	Log Reduction	Percent Reduction
Pillow Case Fabric	3.0×10^5	1.73×10^2	3.25	99.94

Formula for Log reduction:

Determine Log ($x \times 10^a$) of control samples

Determine Log ($x \times 10^a$) of treated samples

Determine geometric mean of control samples:

Log values of control samples: $b_1, b_2, b_3, \dots, b_n$

Mean = $(b_1 \times b_2 \times b_3 \times \dots \times b_n)^{1/n}$

Determine geometric mean of treated samples:

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Log values of treated samples: $C_1, C_2, C_3, \dots, C_n$
Mean = $(C_1 * C_2 * C_3 * \dots * C_n)^{1/n}$

Log reduction = geometric mean of the control samples – geometric mean of the treated samples

Where:

x = value of samples

a = exponent value

b = log value of control samples

c = log value of treated samples

n = number of log values in set

Formula for Percent Reduction:
 $(1 - 10^{-\log \text{reduction}}) \times 100$

Discussion:

The pillowcase fabric demonstrated multiple log reduction of all three challenge bacteria under these test conditions.

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