CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2022
DateRun:	07/13/2022
Experimenters:	Alicia McCarthy, Aditi Patel
ClientType:	Cleaning Equipment Mfr
ProjectNumber:	Project #1
Substrates:	Glass/Quartz, Stainless Steel, Laminate
PartType:	Coupon
Contaminants:	Bacteria - Gram Negative, Bacteria - Gram Positive
Cleaning Methods:	Manual Wipe
Analytical Methods:	Organism count
Purpose:	To test the gram-negative and gram-positive bacteria removal efficacy of E-Cloth products off various substrates.

Experimental Procedure:

Gram-negative and gram-positive bacteria, *Escherichia coli (E.coli) ATCC 29214 and Listeria monocytogenes (L. monocytogenes) ATCC 35752*, were sub-cultured twenty-four hours in tryptic soy broth (TSB) at 37°C (98.6°F) prior to testing. For each new E-cloth product, four coupons (2" x 1") of a specified substrate were contained in a sterile petri dish to act as the positive control (P+), negative control (N-), Test 1 (T1), and Test 2 (T2) substrates. The substrates tested for each bacteria type included glass, laminate, and stainless steel related to the product use parameters designated by E-cloth. Ten microliters of the bacteria inoculated the P+, T1, and T2 coupons. Coupons were incubated at room temperature for 15 minutes in an aseptic environment before treating the N-, T1, and T2 coupons with an E-cloth product. The P+ coupons were placed into 50ml conical tubes containing Dey and Engley (DE) Neutralizing broth.

Supplied new E-cloth products were dipped in Deionized (DI) water before manually squeezing to keep the product damp before attaching to the sled of the Straight-Line Washability (SLW) unit. The SLW unit simulated manual wiping by passing three times over the contaminated coupon surface before placing the cleaned coupon immediately into each of the respective D/E broth conical tubes with sterile forceps. The conical tubes were placed on the shaker for 10 minutes before performing serial dilutions in 1X PBS up to 10^4 (1:1000). Stock (1:1) and serial dilution solutions were plated and spread on tryptic soy agar (TSA). Plates were incubated at 37°C overnight. Isolated colonies were counted the following day to calculate log reduction and percent removal for each disinfection test parameter performed.

Results:

Single Wipe:

Product	Substrate	Organism	Log Reduction	% Reduction
Deep Clean Mop Head	Laminate	E.coli 29214	1.433	96.0727
		L. monocytogenes 35752	2.0932	98.5088
Deep Clean Mop Head	Wood	E.coli 29214	2.0251	99.0430
		L. monocytogenes 35752		
Kitchen Dynamo	Laminate	E.coli 29214	1.9572	98.0833
		L. monocytogenes 35752	1.1454	87.1596
Kitchen Cleaning Cloth	Laminate	E.coli 29214	2.9724	99.8785
		L. monocytogenes 35752		
Non-scratch Scrubbing Pad	Laminate	E.coli 29214		
		L. monocytogenes 35752	6.9100	100.000
Stainless Steel Cloth	Stainless Steel	E.coli 29214	1.1494	79.4231
		L. monocytogenes 35752	0.2625	43.3094
Washing Up Pad	Laminate	E.coli 29214	1.7693	97.5302

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		L. monocytogenes 35752	1.3259	94.6183
Window Cleaning Waffle Weave Cloth	Glass	E.coli 29214	0.3007	41.8317
		L. monocytogenes 35752	1.1028	88.6389

Multiple Wipes (three total):

Product	Substrate	Organism	Log Reduction	% Reduction
Deep Clean Mop Head	Laminate	E.coli 29214	2.0719	98.8341
		L. monocytogenes 35752	1.6470	97.6194
Deep Clean Mop Head	Wood	E.coli 29214	4.5100	99.9408
		L. monocytogenes 35752	2.1094	99.2097
Kitchen Dynamo	Laminate	E.coli 29214	2.3006	99.4757
		L. monocytogenes 35752	3.0432	99.9083
Kitchen Cleaning Cloth	Laminate	E.coli 29214	2.7793	99.9045
		L. monocytogenes 35752	2.5188	99.6971
Non-scratch Scrubbing Pad	Laminate	E.coli 29214	1.6264	96.9966
		L. monocytogenes 35752	2.2902	99.4729
Stainless Steel Cloth	Stainless Steel	E.coli 29214	1.5058	94.8134
		L. monocytogenes 35752	2.6469	99.7659
Washing Up Pad	Laminate	E.coli 29214	1.8647	98.6132
		L. monocytogenes 35752	1.1209	91.8265
Window Cleaning Waffle Weave Cloth	Glass	E.coli 29214	1.2412	94.2493
		L. monocytogenes 35752	1.4161	95.6140

Summary:

Conclusion: A majority of the E. cloth products produced a one to two log reduction removal of gram-negative and gram-positive bacteria on the specified glass, laminate, and stainless steel surfaces associated with each product. The Non-scratch Scrubbing Pad was the most effective after a single wipe by removing 100% of *L. monocytogenes* on laminate. The Kitchen Dynamo performed the best with a three-log reduction of *L. monocytogenes* after three manual wipes on a laminate surface.