



Toxics Use Reduction Institute's Cleaning Lab
 UMass Lowell
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TURI SURFACE SOLUTIONS LABORATORY EVALUATION SUMMARY

SCL #: 2019-26-441-2-2

Date Run: 06/19/19

Experimenters: Apel, Nguyen, Gifford, Goding, Demers, Smith

Client Type: Janitorial

Project Number: 2019-26-441-2-2

Substrates: Glass Bottle

Contaminants: Spoiled Milk

Cleaning Methods: Spray

Analytical Methods: Odor Panel

Purpose: To evaluate the effectiveness of E-Mop with 3 g salt and Febreze Fabric Free Nature on the elimination of unwanted odors.

Experimental Procedure: A total of seven clean glass bottles were each filled with ten milliliters of whole milk. Six of these bottles were treated by formulations and the remaining one bottle was used as a control. All bottles were capped and stored in a room for six days at room temperature (68 °F). After the six day spoiling period, the bottles were opened and a panel of five observed for signs of spoiling odor, according to the rating system (see below). Three bottles were reserved for each formulation, and two sprays of the respective formulations were sprayed into each bottle. After swirling the contaminants in the bottle ensuring a mixture, the odor panel graded each bottle with their ratings recorded. This process continued by introducing two sprays into each bottle of its respective formulation and rating until six sprays were reached. The bottles containing the spoiled milk were stored once again at room temperature and sat overnight. All testing bottles were rated the next day with no treatment, and then an additional two sprays were added before final ratings. E-Mop with 3 g salt was used at a temperature of 71 °F and a pH of 8, and Febreze Fabric Free Nature was used at a temperature of 74.7 °F and a pH of 6.

The following rating system was used to assess the malodor of the spoiled milk: 1 = No Malodor 5 = High Malodor

Chemistries Evaluated: (1) E-Mop with 3 g salt; (2) Febreze Fabric Free Nature Formulation

Results: Overnight, E-Mop with 3 g salt and Febreze Fabric Free Nature increased the malodor rating. Overall, after treating each bottle with formulation with 8 sprays, E-Mop with 3 g salt slightly changed the malodor rating and Febreze Fabric Free Nature Formulation did not significantly change the malodor rating compared to the original malodor rating of each bottle.

Cleaner	Treatment	Panelist 1	Panelist 2	Panelist 3	Panelist 4	Panelist 5	Average	Overall Average	
Control	Original Untreated (6 days)	3.5	3	3	3.5	3	3.2	3.20	
	Overnight Untreated	3	4	3.5	3	5	3.7	3.70	
	Original Untreated (6 days)	3.5	4	4	4	4	3.9	3.90	
		5	4	4.5	5	3	4.3		
		4	3	4	4.5	2	3.5		
	2 Sprays	4.5	3.5	3.5	3.5	3	3.6	3.90	
		4.5	4	4.5	5	3	4.2		
		4	5	4	4	2.5	3.9		
	E-Mop with 3 g salt	4 Sprays	3	3	3	3	3	3	3.13
			2.5	3	4	4.5	2.5	3.3	
2.5			3	4	3.5	2.5	3.1		
6 Sprays	6 Sprays	3	3	3	2.5	2.5	2.8	2.80	
		2	2.5	3.5	3	2	2.6		
		2.5	3	4	3	2.5	3		
Overnight	Overnight	4	2.5	4	4.5	4.5	3.9	3.77	
		3	3.5	5	4	3.5	3.8		

		3	3.5	4.5	3.5	3.5	3.6	
	8 Sprays	3.5	3	4	3.5	4	3.6	3.43
		3	2.5	4.5	4	2.5	3.3	
		3.5	3	4	3.5	3	3.4	
Febreze Fabric Free Nature Formulation	Original Untreated (6 days)	4	5	4	3.5	5	4.3	3.93
		4	5	4	4.5	5	4.5	
		3	4	2	2	4	3	
	2 Sprays	3	4	3	3	5	3.6	4.00
		4	5	4	5	5	4.6	
		2	5	3.5	3.5	5	3.8	
	4 Sprays	4	3	3.5	3.5	4	3.6	3.70
		4	5	4.5	5	5	4.7	
		1	4	2	2	5	2.8	
	6 Sprays	4	4	4	3.5	5	4.1	3.70
		2	5	4.5	5	5	4.3	
		1	4	2	1.5	5	2.7	
	Overnight	5	4	4	3	5	4.2	4.30
		5	5	5	5	5	5	
		1	5	4	4	4.5	3.7	
	8 Sprays	4.5	5	4	2.5	5	4.2	3.90
		5	5	4.5	4	5	4.7	
		1	4	3	1.5	4.5	2.8	

Average Scores						
	Original Untreated (6 Days)	2 Sprays	4 Sprays	6 Sprays	Overnight	8 Sprays
E-Mop with 3 g salt	3.90	3.90	3.13	2.80	3.77	3.43
Febreze Fabric Free Nature Formulation	3.93	4.00	3.7	3.7	4.3	3.9

Differences of Average Scores Between Tests							
	Original Untreated (6 Days)	2 Sprays	4 Sprays	6 Sprays	Overnight	8 Sprays	Overall
E-Mop with 3 g salt	0	0	-0.77	-0.33	+0.97	-0.34	-0.47
Febreze Fabric Free Nature Formulation	0	+0.07	-0.30	0.00	+0.60	-0.40	-0.03

Summary:

Product Name	Conc.	Original Rating	Overnight Rating	Final Rating	Overall Difference
E-Mop with 3 g salt	100	3.90	3.77	3.43	-0.47
Febreze Fabric Free Nature Formulation	100	3.93	4.3	3.9	-0.03

Conclusion: E-Mop with 3 g salt was observed to be slightly more effective than and the comparative formulation, Febreze Fabric Free Nature Formulation, in eliminating the malodor of spoiled milk. Febreze Fabric Free Nature Formulation was observed to not significantly reduce the original malodor of the spoiled milk. Overall, E-mop with 3 g salt reduced the original rating by 0.47, and Febreze Fabric Free Nature Formulation reduced the original rating by 0.03.

