CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2017
DateRun:	11/28/2016
Experimenters:	George Liang, Vinh Tran
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #9
Substrates:	Ceramics
PartType:	Coupon
Contaminants:	Films, Soaps
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate supplied product for bathroom removal from ceramic surfaces following the TURI Lab bathroom cleaning method and to ensure consistent final weights.

Experimental Procedure:

The following experimental procedure is in accordance to cleaning method TURI Lab bathroom for GS-37 cleaning standard operating procedure.

Soiling Process:

A set of ceramic substrates were coated on the back of the ceramic with a paint primer for waterproof resistance. Pre-weighed coated ceramic substrates were contaminated with 0.5 grams of GS 37 (bathroom soil) using a handheld swab on the center of the ceramic surfaces. GS 37 was made with the following ingredients: All-in-one shampoo and conditioner 28.6%, Dry skin lotion 21.4%, Liquid hand soap 21.4%, Liquid body wash 14.3%, Deodorant bar soap 7.2% and water 7.1%. The contaminated ceramic substrates were aged overnight at room temperature. The coupons were then to determine the amount of contaminant added.

Cleaning Process:

Three soiled coupons were placed into a Gardner Straight Line Washability unit. Two Wypall X60 reinforced wipe was attached to the cleaning sled and soaked with one spray of cleaning solutions. Each substrate was sprayed one time with the same cleaning solution. The solution was allowed to penetrate for 30 seconds and followed by cleaning in the SLW unit for 20 cycles (~33 seconds).

Efficacy Rating Process:

The coupons were left to dry at room temperature, and weighed in time intervals of 1 hour, 1 day, 2 days, and 3 days after the cleaning process. The visual ranking of the cleaned substrates was in accordance with the following ratings:

Visual Clean Rating Key (I made this up)
1 Virtually all soil removed
2 Approximately 75% soil removed
3 Approximately 50% soil removed
4 Approximately 25% soil removed
5 No or very little soil removed

Results:

The objective of the experiment is to compare the effectiveness and to ensure consistency of the sampled cleaners: Mineral Shock 1270G with the comparative cleaners: Lav Safe, and Power Bathroom through gravimetric and visual efficacy evaluations.

Comparative Analysis

All three cleaning agents were effective in removing the GS37 bathroom soil from ceramic surfaces. However, the sample cleaner: Mineral Shock 1270G was observed to be more effective than the comparative cleaner: Lav Safe; with respective efficacy ratings of: 94% and 85%. In addition, the supplied product was observed to be as effective as the second comparative cleaner: Power Bathroom with respective efficacy ratings of: 94% and 92%.

On average, all ceramic substrates were drying at a rate of 2% per day at room temperature after being cleaned. However, the drying rate for the cleaning agents on average were consistent. Note that on the 3rd day for overtime dryness with the cleaning agent:

Gravimetric Results: The following table lists the amount of soil added, removed, and efficiency as determined gravimetrically for each product tested.

Gravimetric Result After Time Interval: 1 hour

Cleaner	Initial wt (g)	Final wt.(g)	%Removed	Avg. % Removed
Mineral Shock 1270G				

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	0.1326	0.0118	91.1	91.63
	0.1331	0.0119	91.06	
	0.1349	0.0098	92.74	
Lav Safe				
	0.1345	0.0214	84.09	82.64
	0.1346	0.0278	79.35	
	0.1353	0.021	84.48	
Power Bathroom				
	0.1374	0.0105	92.36	89.31
	0.1376	0.022	84.01	
	0.1351	0.0114	91.56	

Gravimetric Result After Time Interval: 1 day

Mineral Shock 1270G				
	0.1326	0.0085	93.59	93.95
	0.1331	0.0088	93.39	
	0.1349	0.0069	94.89	
Power Bathroom				
	0.1345	0.0184	86.32	85.16
	0.1346	0.023	82.91	
	0.1353	0.0186	86.25	
Power Bathroom				
	0.1374	0.0076	94.47	92.01
	0.1376	0.0155	88.74	
	0.1351	0.0097	92.82	

Gravimetric Result After Time Interval: 2 day

Mineral Shock 1270G				
	0.1326	0.0060	95.48	96.25
	0.1331	0.0054	95.94	
	0.1349	0.0036	97.33	
Lav Safe				
	0.1345	0.0147	89.07	87.54
	0.1346	0.0197	85.36	
	0.1353	0.0160	88.17	
Power Bathroom				
	0.1374	0.0022	98.40	94.69
	0.1376	0.0124	90.99	
	0.1351	0.0072	94.67	

Gravimetric Result After Time Interval: 3 day

Mineral Shock 1270G				
	0.1326	0.0043	96.76	97.92
	0.1331	0.0027	97.97	
	0.1349	0.0013	99.04	
Lav Safe				
	0.1345	0.0123	90.86	88.82
	0.1346	0.0183	86.4	
	0.1353	0.0146	89.21	
Power Bathroom				
	0.1374	-0.0011	100.8	96.05
	0.1376	0.0109	92.08	
	0.1351	0.0064	95.26	

Summary table of overtime dryness

Cleaner:				

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	1st day (%)	2nd day (%)	3rd day (%)	Average Drying (%/ day)
Mineral Shock 1270G	2.32	2.3	1.67	2.1
Lav Safe	2.52	2.37	1.29	2.06
Power Bathroom	2.7	2.68	1.36	2.25

Visual Results: Table pertaining to the amount of soil removed through a visual ranking by its respective cleaning agent..

Cleaner	Visual Rating
Mineral Shock 1270G	2
Lav Safe	3
Power Bathroom	2

Summary:

Substrates:	Ceramics				
Contaminants:	Films, Soaps				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
EnvirOx LLC	Mineral Shock 1125 G	100	93.95	☑	
Next-Gen Supply Group	LAV Safe 8	100	85.16	☑	
Reckitt Benckiser	Lysol Power Bathroom Cleaner (Spray)	100	92.01	☑	

Conclusion:

In conclusion, the effectiveness of the cleaning agent resulted in the following order: Mineral Shock 1270G; Lav Safe; Power Bathroom. Overall efficiencies tended to increase over time with extended drying times, but this change was equivalent for all products, thus no change in performance rankings occurred.