CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2014
DateRun:	12/11/2014
Experimenters:	Loc Nguyen, George Liang
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #6
Substrates:	Glass/Quartz, Chrome
PartType:	Coupon
Contaminants:	Films, Soaps
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate supplied products for glass cleaning using manual cleaning
Experimental Procedure:	Supplied products were diluted with room temperature water to the requested dilution. Preweighed Glass; Stainless Steel; Mirror coupons were coated with SSL Soil 2 (Glass soap scum: Water 51.5%, Hair gel 25.6%, Toothpaste 10.4%, Shaving cream 5.3%, Hair spray 3.7% and Spray deodorant 3.5%) using a handheld swab and allowed to dry for 24 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added. Three coupons were placed into a Gardner Straight Line Washability unit. A Wypall L20 reinforced wipe was attached to the cleaning sled and soaked with 1 spray of cleaning solutions. Each coupon was sprayed 1-3 times with the same cleaning solution. The solution was allowed to penetrate for 30 seconds followed by cleaning in the SLW unit for 5 cycles (~10 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded and efficiencies recorded. Visual observations were made on the coupons for spotting and filming following the general guidelines set forth in the CSPA DCC 09A. Filming is best recognized as "haziness" or overall "milkiness", while streaking is best identified as dried droplets or "spotting", usually found strung together into thin white lines. Each coupon was evaluated separately for filming and streaking, (i.e., product residues without added soil), according to a scale of "1" to "7" where: Filming Streaking 1 = no visible filming 1 = no visible streaking (excellent performance) 7 = high filming 7 = high streaking (poor performance) Chemistries Evaluated: Multipurpose 1:160; Multipurpose HC 1:256; Proforce Glass;

Results:

Cleaner	Initial wt	Final wt	% Removed	Average
Multipurpose 1:16_ceramic	0.0600	0.0029	95.48	
Multipurpose 1:16_ceramic	0.0400	0.0017	95.60	
Multipurpose 1:16_ceramic	0.0400	0.0036	91.37	94.15
Multipurpose 1:16_plastic	0.0700	0.0080	85.45	
Multipurpose 1:16_plastic	0.0800	0.0045	94.72	
Multipurpose 1:16_plastic	0.0500	0.0093	87.33	89.17
Multipurpose 1:16_chrome	0.0500	0.0102	78.44	
Multipurpose 1:16_chrome	0.1000	0.0045	95.54	
Multipurpose 1:16_chrome	0.0400	0.0018	95.15	89.71
Multipurpose HC 1:25.6_ceramic	0.0500	0.0074	86.30	
Multipurpose HC 1:25.6_ceramic	0.0800	0.0061	92.09	
Multipurpose HC 1:25.6_ceramic	0.0700	0.0046	92.94	90.44
Multipurpose HC 1:25.6_plastic	0.1000	0.0108	89.42	

CLEANING LABORATORY EVALUATION SUMMARY

Multipurpose HC 1:25.6_plastic	0.1300	0.0037	97.05	
Multipurpose HC 1:25.6_plastic	0.1100	0.0047	95.73	94.07
Multipurpose HC 1:25.6_chrome	0.0500	0.0080	85.45	
Multipurpose HC 1:25.6_chrome	0.0900	0.0045	94.72	
Multipurpose HC 1:25.6_chrome	0.0700	0.0093	87.33	89.17
Proforce Bathroom_ceramic	0.0500	0.0005	98.93	
Proforce Bathroom_ceramic	0.0300	0.0017	94.35	
Proforce Bathroom_ceramic	0.0500	0.0029	94.09	95.79
Proforce Bathroom_plastic	0.0600	0.0016	97.50	
Proforce Bathroom_plastic	0.0600	0.0028	95.41	
Proforce Bathroom_plastic	0.0700	0.0031	95.42	96.11
Proforce Bathroom_chrome	0.0400	0.0012	97.06	
Proforce Bathroom_chrome	0.0400	0.0033	90.96	
Proforce Bathroom_chrome	0.0400	0.0036	90.93	92.98

Visual Results:

Cleaner	Streak 1	2	3	Avg	% Avg
Multipurpose 1:160 Glass	2.17	1.83	1.67	1.89	
Multipurpose 1:160 Mirror	3.67	3	2.83	3.2	2.5
Multipurpose HC 1:256 Glass	2.5	1.83	1.67	2	
Multipurpose HC 1:256 Mirror	3.17	2.67	2	2.6	2.3
Proforce Glass RTU Glass	1.67	1.67	1.5	1.61	
Proforce Glass RTU Mirror	2	2.83	2.83	2.6	2.1
Cleaner	Film 1	2	3	Avg	% Avg
Multipurpose 1:160 Glass	1.83	1.5	1.83	1.72	
Multipurpose 1:160 Mirror	2.83	2.17	3	2.7	2.19
Multipurpose HC 1:256 Glass	1.83	2.17	2	2	
Multipurpose HC 1:256 Mirror	1.83	1.67	3.67	2.4	2.2
Proforce Glass RTU Glass	1.33	2.5	1.33	1.72	
Proforce Glass RTU Mirror	2.33	2.5	1.83	2.2	1.97

Summary:

Substrates:	Glass/Quartz, Chrome
Contaminants:	Films, Soaps

CLEANING LABORATORY EVALUATION SUMMARY

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
EnvirOx LLC	Multi-Purpose Hyper	0.63	91.01	☑	
EnvirOx LLC	Multi-Purpose Hyper	0.39	91.23	☑	
EcoLab	Proforce Glass Cleaner	100	94.96	☑	

Conclusion:

From the above gravimetric analysis, we can see that the Proforce Glass is slightly more effective on the glass, chrome, and mirror substrates at an average of 94.96% compared to Multipurpose and Multipurpose HC at 91.01% and 91.23%, respectfully. All cleaners were effective at removing soil with over 85% efficiency. Standard rating of a cleaner's effectiveness is measured by the effective cleaner's efficiency on the basis of 85% or above would deem a cleaner to be effective at removing that particular soil.

Proforce Glass had the least average streaking on surfaces compared to the rest of the streaking caused by Multipurpose and Multipurpose HC. Overall Proforce Glass had an average streaking of 2.10% whereas Multipurpose and Multipurpose HC at 2.50% and 2.30% respectively. Proforce Glass also had the least average filming on surfaces. Proforce had an average of 2.19% filming compared to Multipurpose and Multipurpose HC very close results of 2.19% and 2.20% respectively.