CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2014
DateRun:	09/28/2014
Experimenters:	Loc Nguyen, George Liang
ClientType:	Cleaning Equipment Mfr
ProjectNumber:	Project #1
Substrates:	Ceramics
PartType:	Coupon
Contaminants:	Hucker's Soil
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric
Purpose:	To evaluate three supplied products for all purpose cleaning following GS 37 requirements
Experimental Procedure:	Preweighed ceramic coupons were coated with Hucker's Soil Formulation (Jif Creamy Peanut Butter, Salted Butter, Arrowhead Mills stone ground wheat flour, Egg Yolk, Evaporated milk, distilled water, Printer's ink with boiled linseed oil, Shaws saline solution) using a handheld swab and allowed to dry for 2 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added. A second set of coupons were coated with grease DCC-17 formulated by the following. A mixture of three cooking oils/greases was made. A melt blend of 33% vegetable shortening, 33% lard, 33% vegetable oil and 1% carbon lampblack was made up fresh for the testing. Care was taken in the application of the soil onto the coupons so that light and heavy areas were avoided. Allow the soiled tiles to dry for 24 hours at room temperature. Five reflectance readings were made for each of three soiled tiles to obtain a soiled reference value. Three coupons were placed into a Gardner Straight Line Washability unit. A Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 1 spray of cleaning solution. Each coupon was sprayed once with the same cleaning solution. The cleaning unit was run for 20 cycles (~33 seconds). At the end of the cleaning, coupons were left to dry overnight. After drying, final weights were recorded, efficiencies were calculated and recorded.

Results:

Cleaner	Initial wt	Final wt	% Removed	%Average
Hardwater_3ml/ 6oz_hucker				
	0.7237	0.0985	86.39	
	0.6951	0.1082	84.43	
	0.6517	0.1244	80.91	83.91
Hardwater_3.75ml/ 6oz_hucker				
	0.6019	0.0709	88.22	
	0.6374	0.0973	84.73	
	0.6359	0.0848	86.66	86.54
Diwater_3ml/ 6oz_hucker				
	0.6498	0.1045	83.92	
	0.6776	0.0725	89.30	
	0.6716	0.108	83.92	85.71
Diwater_3.75ml/ 6oz_hucker				
	0.6594	0.1507	77.15	
	0.6639	0.0727	89.05	
	0.6728	0.0551	91.81	86
Cleaner	Initial wt	Final wt	% Removed	%Average
Hardwater_3ml/ 6oz_dcc-17				
	0.7469	0.1021	86.33	
	0.7870	0.0583	92.59	
	0.4468	0.0326	92.70	90.54

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Hardwater_3.75ml/ 6oz_dcc-17				
	0.8816	0.1439	83.68	
	0.6789	0.0957	85.90	
	0.7172	0.0386	94.62	88.07
Diwater_3ml/ 6oz_dcc-17				
	0.5063	0.0657	87.02	
	0.5945	0.0864	85.47	
	0.8919	0.0865	90.3	87.6
Diwater_3.75ml/ 6oz_dcc-17				
	0.4628	0.0673	85.46	
	0.5546	0.0160	97.12	
	0.5741	0.0469	91.83	91.47

Summary:

Substrates:	Ceramics
Contaminants:	Hucker's Soil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Clorox Company	Green Works Multi-Surface Cleaner	100	82.23	☑	Hardwater/greenworks 3ml/ 6oz
Clorox Company	Green Works Multi-Surface Cleaner	100	87.31	☑	Hardwater/greenworks 3.75ml/6oz
Clorox Company	Green Works Multi-Surface Cleaner	100	86.66	☑	DIwater/greenworks 3ml/6oz
Clorox Company	Green Works Multi-Surface Cleaner	100	88.74	☑	DIwater/greenworks 3.75ml/ 6oz

Conclusion:

A cleaning product is considered effective when the efficiency of the product removes 85% of the soil and above. All cleaner concentrations were effective in removal of soil from ceramic surfaces with the highest at about 89% and lowest at about 87%. Higher concentration of Greenworks cleaner resulted in higher removal efficiency. DI water was slightly better at soil removal than hard water.