CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2014
DateRun:	08/11/2014
Experimenters:	Loc Nguyen, George Liang
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Ceramics, Plastic, Steel
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:	Three sets of nine ceramic, stainless steel, and polycarbonate coupons were weighed and then coated with the Hucker's Soil Formulation (Jif Creamy peanut butter 9.2%, salted butter 9.2%, Arrowhead Mills stone ground wheat flour, 9.2%, egg yolk, 9.2%, evaporated milk 13.8%, distilled water 45.8%, Printer's ink with boiled linseed oil 0.9%, saline solution 2.7%) 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. Three coupons were placed into a Gardner Straight Line Washability unit. A Kimberly-Clark Wypal x60 reinforced paper towel was attached to the cleaning sled and soaked with 1 spray of cleaning solution. Each coupon was sprayed 1 time with the same cleaning solution. The cleaning unit was run for 20 cycles (~33 seconds). Final weights were recorded, efficiencies were calculated and recorded. ChemistriesEvaluated: Zbioscience A1+; Clorox 409; Greenworks;
Results:	All three products were effective at removing the Hucker’s soil from some surfaces using manual wiping. Zbioscience resulted in the lowest efficiency average, removing just below 85% of the Hucker’s soil. The table lists the amount of soil added, the amount remaining after cleaning and the calculated efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed	% Average
Z Bio new formula 1:50_painted aluminum	0.2769	0.0879	68.26	
Z Bio new formula 1:50 painted aluminum	0.2752	0.0180	93.46	
Z Bio new formula 1:50 painted aluminum	0.2734	0.0458	83.25	81.65
Z Bio new formula 1:50 plastic	0.2712	0.0419	84.55	
Z Bio new formula 1:50 plastic	0.2734	0.0130	95.25	
Z Bio new formula 1:50 plastic	0.2660	0.0137	94.85	91.55
Z Bio new formula 1:50 ceramic	0.2710	0.0384	85.83	
Z Bio new formula 1:50 ceramic	0.2691	0.0473	82.42	
Z Bio new formula 1:50 ceramic	0.2666	0.0742	72.17	80.14
	0.3248	0.1047	67.76	

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409 painted aluminum				
409 painted aluminum	0.2833	0.0465	83.59	
409 painted aluminum	0.2997	0.0483	83.88	78.41
409 plastic	0.3350	0.0278	91.70	
409 plastic	0.3243	0.0158	95.13	
409 plastic	0.3334	0.0549	83.53	90.12
409 ceramic	0.3066	0.0230	92.50	
409 ceramic	0.3346	0.0274	91.81	
409 ceramic	0.3401	0.0773	77.27	87.19
Greenworks painted aluminum	0.3586	0.0719	79.95	
Greenworks painted aluminum	0.3853	0.0119	96.91	
Greenworks painted aluminum	0.3716	0.0275	92.60	89.82
Greenworks plastic	0.4060	0.0082	97.98	
Greenworks plastic	0.3866	0.0045	98.84	
Greenworks plastic	0.3644	0.0179	95.09	97.30
Greenworks ceramic	0.3273	0.0363	88.91	
Greenworks ceramic	0.3198	0.0157	95.09	
Greenworks ceramic	0.2461	0.0638	74.08	86.03

Summary:

Substrates:	Ceramics, Plastic, Steel
Contaminants:	Hucker's Soil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Fisher Scientific	Absolute Ethanol	0	0.00	☐	
Bio Science	Z Biosurfactant Cleaner A-1	2	73.87	☑	
Clorox Company	Green Works General Purpose Cleaner Concentrate	100	91.00	☑	
Clorox Company	Formula 409 All Purpose Cleaner	100	0.00	☑	

Conclusion:

Conclusion: Greenwork All Purpose was found to be most effective for removing the Hucker’s soil from various surfaces using manual wiping with a 91% average. Zbioscience was effective in removing Hucker’s soil from plastic but not from painted aluminum or ceramic.