CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2013
DateRun:	12/10/2013
Experimenters:	Jason Marshall, Junhee Cho, Loc Nguyen
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 supplied product against a conventional and green all purpose product
Experimental Procedure:	The supplied cleaning product was diluted with DI water at room temperature the recommended concentration for all purpose cleaning (2 oz/gallon). The other two products were used at the supplied ready to use concentration. Preweighed ceramic, plastic and painted metal 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, 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. 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 solutions. Each coupon was sprayed 1time with the same cleaning solution. Coupons soaked for 10 seconds and then the cleaning unit was run for 20 cycles (~33 seconds). At the end of the cleaning, coupons were weighed a final time and efficiencies were calculated and recorded. Chemistries Evaluated: nClean; Formula 409; 7th Generation All Purpose
Results:	The nClean product was the most effective at removing the Hucker's soil from the three surfaces using manual wiping, averaging 75% removal. The Formula 409 removed 65% and the 7th Generation product removed 60%. 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
nCleans - ceramic			
	0.3924	0.2285	41.77
	0.8390	0.5324	36.54
	0.4554	0.1695	62.78
nCleans - plastic			
	0.4311	0.0520	87.94
	0.4121	0.0300	92.72
	0.2179	0.0137	93.71
nCleans - painted metal			
	0.4803	0.0347	92.78
	0.3319	0.0370	88.85
	0.2228	0.0325	85.41
Formula 409 - ceramic			
	0.2625	0.1456	44.53
	0.2478	0.1487	39.99
	0.5732	0.4214	26.48
Formula 409 - plastic			
	0.1919	0.0255	86.71
	0.3180	0.0827	73.99
	0.4091	0.0738	81.96
formula 409 - painted metal			

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	0.2928	0.1614	44.88
	0.2480	0.0072	97.10
	0.4939	0.0330	93.32
7th Gen All Purpose - ceramic			
	0.4089	0.1854	54.66
	0.7936	0.6127	22.79
	0.3671	0.1988	45.85
7th Gen All Purpose - plastic			
	0.2360	0.0509	78.43
	0.0327	0.0014	95.72
	0.2453	0.0093	96.21
7th Gen All Purpose - painted metal			
	0.2345	0.1076	54.12
	0.4165	0.3851	7.54
	0.2637	0.0365	86.16

Summary:

Substrates:	Ceramics, Plastic, Steel				
Contaminants:	Hucker's Soil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Fisher Scientific	Absolute Ethanol	0	0.00	☐	
Geophia	nClean	1.5	75.83	☑	
Clorox Company	Formula 409 All Purpose Cleaner	100	65.44	☐	
Seventh Generation	Free & Clear All Purpose	100	60.16	☐	

Conclusion: The nClean product was found to be more effective at removing the Hucker's soil from various surfaces using manual wiping than the two commercially available products were.