CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2010
DateRun:	05/29/2010
Experimenters:	Jason Marshall, Timothy Weil
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 reformulated product for all purpose cleaning following GS 37 requirements
Experimental Procedure:	The supplied ingredients were mixed according to the supplied procedures, substituting new surfactant into process. The end product was diluted 1 part solvent solution to 32 parts water. The cleaning products were diluted with DI water. A conventional product was diluted 1:48 (~2%). Preweighed ceramic, plastic G-10 and painted steel coupons were coated with 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%, Shaws saline solution 2.7%) 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 Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 5-7 sprays of cleaning solutions. Each coupon was sprayed 7-10 times with the same cleaning solution. The cleaning unit was run for 20 cycles (~33 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded, efficiencies were calculated and recorded.
Results:	Each replacement surfactant mixtures were effective at removing the Hucker’s soil from the three surfaces using manual wiping. Each removed more the current formulation. Three surfactant mixtures removed more than the conventional comparative product (94%) and the other 3 removed around 90% of the soil. The control product removed 88%. The table lists the amount of soil added, the amount remaining after cleaning and the calculated efficiency for each coupon cleaned. The conventional product removed 93% of the soil.

Cleaner	Initial wt	Final wt	% Removed
Nutrisol w/ Calsoft L40 Ceramic			
	2.1281	0.0167	99.22
	0.2635	0.0139	94.72
	0.1743	0.0100	94.26
Nutrisol w/ Calsoft L40 Steel			
	0.1188	0.0117	90.15
	0.2249	0.0031	98.62
	0.1559	0.0199	87.24
Nutrisol w/ Calsoft L40 Plastic			
	0.2153	0.0024	98.89
	0.1189	0.0046	96.13
	0.2448	0.0141	94.24
Nutrisol w/ Calsoft AOS40 Ceramic			
	0.4916	0.0117	97.62
	1.0104	0.0056	99.45
	0.1513	0.0021	98.61
Nutrisol w/ Calsoft AOS40 Steel			
	0.3769	0.1420	62.32

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	0.1394	0.0082	94.12
	0.1388	0.0079	94.31
Nutrisol w/ Calsoft AOS40 Plastic			
	0.0739	-0.0007	100.95
	0.1778	0.0020	98.88
	0.1959	0.0045	97.70
Nutrisol w/ Mirataine H2CA Ceramic			
	0.2065	0.0116	94.38
	0.9899	0.0152	98.46
	1.4037	0.0210	98.50
Nutrisol w/ Mirataine H2CA Steel			
	0.1404	0.0152	89.17
	0.2187	0.0255	88.34
	0.1664	0.0295	82.27
Nutrisol w/ Mirataine H2CA Plastic			
	0.1480	0.0152	89.73
	0.0751	0.0095	87.35
	0.1270	0.0165	87.01
Nutrisol w/ Mackamine C-8 Ceramic			
	0.1046	0.0025	97.61
	0.1777	0.0013	99.27
	0.1447	0.0135	90.67
Nutrisol w/ Mackamine C-8 Steel			
	0.2362	0.0199	91.57
	0.2145	0.0109	94.92
	0.1830	0.0761	58.42
Nutrisol w/ Mackamine C-8 Plastic			
	0.1250	0.0019	98.48
	0.1186	0.0095	91.99
	0.1236	0.0129	89.56
Nutrisol w/ SugaFax D10 Ceramic			
	1.0825	0.0162	98.50
	1.0895	0.0260	97.61
	0.7213	0.0187	97.41
Nutrisol w/ SugaFax D10 Steel			
	0.0697	0.0060	91.39
	0.0753	0.0083	88.98
	0.1294	0.0018	98.61
Nutrisol w/ SugaFax D10 Plastic			
	0.1226	0.0083	93.23
	0.0551	0.0026	95.28
	0.0554	0.0009	98.38
Nutrisol w/ SugaNate 100 Ceramic			
	0.7601	0.0100	98.68

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	0.4468	-0.0012	100.27
	0.1493	-0.0004	100.27
Nutrisol w/ SugaNate 100 Steel			
	0.1034	0.0217	79.01
	0.1914	0.0296	84.54
	0.0824	0.0217	73.67
Nutrisol w/ SugaNate 100 Plastic			
	0.1607	0.0161	89.98
	0.1066	0.0023	97.84
	0.1003	0.0150	85.04
MD Stetson 3R Ceramic			
	0.2091	0.0113	94.60
	0.2398	0.0110	95.41
	0.2323	0.0140	93.97
MD Stetson 3R Steel			
	0.2211	0.0092	95.84
	0.0948	0.0054	94.30
	0.1147	0.0096	91.63
MD Stetson 3R Plastic			
	0.0717	0.0102	85.77
	0.1772	0.0111	93.74
	0.1726	0.0128	92.58
Green Bridge All Purpose control Ceramic			
	0.3246	0.0122	96.24
	0.8789	0.0108	98.77
	0.3961	0.0045	98.86
Green Bridge All Purpose control Steel			
	0.1848	0.0255	86.20
	0.2400	0.0760	68.33
	0.1732	0.0339	80.43
Green Bridge All Purpose control Plastic			
	0.1117	0.0099	91.14
	0.2478	0.0125	94.96
	0.4360	0.1058	75.73

Summary:

Substrates:	Ceramics, Plastic, Steel				
Contaminants:	Hucker's Soil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Next-Gen Supply Group	3R All Purpose Cleaner	2.1	93.09	☑	

Conclusion: All possible replacement surfactant mixtures removed over 85% of the Hucker's soil, compared well with the conventional product and outperformed the supplied control product.