CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2010
DateRun:	09/07/2010
Experimenters:	Jason Marshall, Timothy Weil
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Ceramics, Plastic, Steel, Porcelain
PartType:	Coupon
Contaminants:	Greases, Hucker's Soil, Food
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric
Purpose:	To evaluate solvents in formulation for all purpose cleaning

Experimental Procedure:

The previous two supplied solvent were used in supplied three formulations at full strength.

A set of preweighed ceramic, porcelain, plastic G-10 and painted steel coupons were coated with Hucker's Soil Formulation (Jiffy 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. A second set of coupons were coated with DCC 17 grease soil mix (33% vegetable oil, 33% shortening, 33% lard, 15 carbon black). 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:

The APC formulation one worked well on the Hucker's soil, removing more than 85%. The third formulation removed just under 85%. The second formulation was the weakest removing less than 75%. No product left a residue behind on the surface. Similar results were obtained for the DCC 17 grease mix, except the third formulation worked slightly better than the first.

Interesting observation was that when visually inspecting the coupons, the second formulation looked cleaner than the other two formulations for both soils. The table below lists the amount of soil added, remaining and efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
Hucker's Soil			
APC 1 Porcelain			
	0.0683	0.0111	83.75
	0.0516	0.0111	78.49
	0.0708	0.0069	90.25
APC 1 Ceramic			
	0.1094	0.0153	86.01
	0.1115	0.0196	82.42
	0.0844	0.0149	82.35
APC 1 Plastic			
	0.0750	0.0104	86.13
	0.1692	0.0083	95.09
	0.0846	0.0116	86.29
APC 1 Painted steel			
	0.0989	0.0072	92.72
	0.1018	0.0092	90.96
	0.0926	0.0091	90.17
APC 2 Porcelain			
	0.0308	0.0098	68.18
	0.0426	0.0086	79.81
	0.0461	0.0107	76.79

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APC 2 Ceramic			
	0.0534	0.0224	58.05
	0.0447	0.0270	39.60
	0.0580	0.0250	56.90
APC 2 Plastic			
	0.0507	0.0045	91.12
	0.0546	0.0094	82.69
	0.0312	0.0066	78.85
APC 2 Painted steel			
	0.0416	0.0102	75.48
	0.0513	0.0082	84.02
	0.0682	0.0096	85.92
APC 3 Porcelain			
	0.0643	0.0129	79.94
	0.0558	0.0096	82.80
	0.0692	0.0131	81.07
APC 3 Ceramic			
	0.0974	0.0097	90.04
	0.3128	0.0481	84.62
	0.1088	0.0343	68.47
APC 3 Plastic			
	0.0625	0.0077	87.68
	0.0767	0.0061	92.05
	0.0550	0.0094	82.91
APC 3 Painted steel			
	0.0709	0.0089	87.45
	0.0739	0.0083	88.77
	0.0835	0.0076	90.90
DCC 17 Grease			
APC 1 Porcelain			
	0.0738	0.0037	94.99
	0.1137	0.0145	87.25
	0.1434	0.0001	99.93
APC 1 Ceramic			
	0.3160	0.0039	98.77
	0.1902	0.0040	97.90
	0.2857	0.0049	98.28
APC 1 Plastic			
	0.0899	0.0110	87.76
	0.1650	0.0007	99.58
	0.1092	0.0023	97.89
APC 1 Painted steel			
	0.1616	0.0206	87.25
	1.0791	0.1825	83.09
	0.3619	0.0087	97.60
APC 2 Porcelain			
	0.1216	0.0042	96.55
	0.0971	0.0038	96.09
	0.0924	0.0007	99.24
APC 2 Ceramic			
	0.2784	0.0066	97.63
	0.2918	0.0075	97.43
	0.2606	0.0048	98.16
APC 2 Plastic			
	0.0767	0.0079	89.70
	0.0925	0.0070	92.43

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	0.0919	0.0043	95.32
APC 2 Painted steel			
	0.1058	0.0071	93.29
	0.1479	0.0156	89.45
	0.1173	0.0300	74.42
APC 3 Porcelain			
	0.1459	0.0053	96.37
	0.1570	0.0033	97.90
	0.1154	0.0094	91.85
APC 3 Ceramic			
	0.2199	0.0066	97.00
	0.1764	0.0072	95.92
	0.0966	-0.0413	142.75
APC 3 Plastic			
	0.0957	0.0078	91.85
	0.1170	0.0021	98.21
	0.1087	0.0075	93.10
APC 3 Painted steel			
	0.1409	0.0128	90.92
	0.0976	0.0067	93.14
	0.1607	0.0077	95.21

Summary:

Substrates:	Ceramics, Plastic, Steel, Porcelain
Contaminants:	Greases, Hucker's Soil, Food

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Segetis	Segetis APC 1	100	90.62	☑	
Segetis	Segetis APC 2	100	83.22	☐	
Segetis	Segetis APC 3	100	91.70	☑	

Conclusion: Formulations 1 and 3 appear to be effective all-purpose cleaners based on the combined results for both soils tested.