CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2004
DateRun:	11/17/2004
Experimenters:	Jason Marshall, Heidi Wilcox
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Ceramics, Glass/Quartz, Plastic
PartType:	Coupon
Contaminants:	Hucker's Soil
Cleaning Methods:	Low Pressure Spray
Analytical Methods:	Gravimetric
Purpose:	To evaluate supplied product in dishwashing and compare to leading industry product.
Experimental Procedure:	Three substrates were selected to represent possible materials that would be cleaned in a dishwasher. Two cleaning products were tested and compared to each other and to water. One scoop of a product was added to the Miele Automatic G7735 Spay Wash Unit. Jet-Dry rinse aid was added to the machine. Six coupons of each substrate were contaminated with Hucker's soil using a hand held swab and allowed to sit for 24 hours. A second set of weights were recorded to determine the amount of soil added to each coupon. In addition to the six coupons that were contaminated, three uncontaminated coupons were included in the washing cycle as a way to determine redeposition of the contaminant onto the surface of the coupons. Therefore nine coupons per substrate were cleaned in the Miele unit (27 total). The cleaning cycle operated at 150 F and run for 26 minutes. At the end of the cleaning/rinsing, the coupons were removed from the unit and allowed to air dry for 48 hours. At the end of the air drying, final weights were recorded and efficiencies were calculated.
Results:	Both products removed more Hucker's soil than the water alone on all three substrates. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon and substrate cleaned.

Cleaner	Initial wt	Final wt	Ceramic %	Initial wt	Final wt	Glass %	Initial wt	Final wt	Plastic%
Water	0.0972	0.0245	74.79	0.1590	0.0027	98.30	0.1278	0.0086	93.27
	0.5095	0.1632	67.97	0.1101	0.0023	97.91	0.1254	0.0043	96.57
	0.2572	0.0558	78.30	0.1431	0.0030	97.90	0.0933	0.0067	92.82
	0.1898	0.0498	73.76	0.1544	0.0028	98.19	0.1409	0.0039	97.23
	0.5904	0.2679	54.62	0.1601	0.0035	97.81	0.1357	0.0037	97.27
	0.6735	0.2236	66.80	0.0892	0.0026	97.09	0.1775	0.0147	91.72
Cascade	1.1562	0.2827	75.55	0.1809	0.0020	98.89	0.2226	0.0050	97.75
	0.5664	0.1183	79.11	0.1411	0.0012	99.15	0.0774	0.0014	98.19
	0.1226	0.0258	78.96	0.1664	0.0034	97.96	0.1300	0.0036	97.23
	1.7145	0.3298	80.76	0.1668	0.0030	98.20	0.2131	0.0106	95.03
	0.1543	0.0355	76.99	0.1406	0.0032	97.72	0.2545	0.0057	97.76
	2.5877	0.4597	82.24	0.1903	0.0000	100.00	0.2490	0.0012	99.52
Cogent	0.2088	0.0047	97.75	0.2567	-0.0005	100.19	0.1745	0.0059	96.62
	0.1760	0.0022	98.75	0.4198	0.0007	99.83	0.2721	0.0012	99.56
	0.0833	0.0157	81.15	0.1738	0.0001	99.94	0.1202	0.0020	98.34
	0.2882	0.0203	92.96	0.1709	-0.0004	100.23	0.1759	0.0071	95.96
	0.1562	0.0043	97.25	0.1208	-0.0002	100.17	0.1268	0.0041	96.77
	0.5788	0.0211	96.35	0.1516	-0.0003	100.20	0.1762	0.0052	97.05

Averages by Substrate

	Ceramic %	Glass %	Plastic %
Water	69.38	97.87	94.81
Cascade	78.94	98.65	97.58
Cogent	94.03	100.09	97.38

The only set of uncontaminated control coupons to gain a substantial amount of weight were the Cascade ceramic coupons. The table below lists the average weight change for the control coupons.

	Ceramic	Glass	Plastic
Water	0.053	0.0026	0.0043

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Cascade	0.3982	0.0027	0.0002
Cogent	0.0013	-0.0001	0.0006

Summary:

Substrates:	Ceramics, Glass/Quartz, Plastic				
Contaminants:	Hucker's Soil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Water	Water	100	87.35	☑	
Procter & Gamble	Cascade Complete (Dawn)		91.70	☑	1 scoop
Cogent Environmental Solutions	F103		97.17	☑	1 scoop

Conclusion:

The Cogent and Cascade products compared fairly closely to each other when cleaning was conducted in the Miele dishwasher. The Cogent product worked slightly better on the ceramic coupons. The same products will be tested under a similar procedure using a Maytag home dishwasher.