CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2017

DateRun: 05/31/2017

Experimenters: George Liang, Vinh Tran

ClientType:

ProjectNumber: Project #1

Substrates: Ceramics, Plastic, Painted metal

PartType: Coupon

Contaminants: Greases, Oil, Food

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: To evaluate the efficiency of various cleaners in the removal of DCC-17 soil from ceramic, plastic, and painted aluminum coupons.

Experimental Procedure: A set of nine coupons consisting of three ceramic, three plastic, and three painted aluminum coupons were weighed on an analytical balance to determine their initial mass. Once this was completed the coupons were evenly soiled with half a gram of DCC-17 soil with a handheld swab. The coupons were reweighed to determine the mass of the coupons with the contaminant applied. Three coupons were placed on a Gardner Straight Line Washability unit. A Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with a spray of cleaning solution. Each coupon was sprayed one time with the same cleaning solution. The cleaning unit was run for 20 cycles (~33 seconds). The coupons were allowed to dry for an hour before being weighed. The coupons were also weighed a full day afterward to determine if there were any significant changes in mass. Final weights were recorded, efficiencies were calculated and recorded.

Results: The SWR One cleaner was more effective than the Suma Break-Up HD Degreaser in removing DCC-17 soil from ceramic coupons, with an average percentage removal of 95.04% compared to 89.92% after a day of drying. The Suma Break-Up HD Degreaser was more effective than the SWR One cleaner in removing DCC-17 soil from plastic coupons, with an average percentage removal of 95.91% as opposed to 94.99% after one day of drying. The Suma Break-Up HD Degreaser was also more effective than the SWR One cleaner in removing DCC-17 soil from painted aluminum coupons, with an average percentage removal of 94.09% compared to 90.64%. In terms of overall effectiveness, the SWR One cleaner edged out the Suma Break-Up HD Degreaser slightly with an overall average removal of 93.55% as opposed to 93.3%.

Cleaner	Substrate	Initial wt	Final wt	Contaminant % Removed	% Avg. Contaminant Removed	% Efficiency
SWR One	Ceramic	0.4809	0.0391	91.87	94.31	93.20
		0.4850	0.0107	97.79		
		0.4819	0.0324	93.28		
SWR One	Plastic	0.4887	0.0323	93.39	94.96	
		0.4783	0.0208	95.65		
		0.4855	0.0202	95.84		
SWR One	Chrome Plated Aluminum	0.4861	0.0471	90.31	90.34	
		0.4832	0.0502	89.61		
		0.4792	0.0427	91.09		
Suma Break-Up HD Degreaser	Ceramic	0.4782	0.0435	90.90	88.73	92.81
		0.4878	0.0516	89.42		
		0.4800	0.0678	85.87		
Suma Break-Up HD Degreaser	Plastic	0.4852	0.0219	95.49	95.86	
		0.4814	0.0187	96.12		
		0.4912	0.0197	95.99		
Suma Break-Up HD Degreaser	Chrome Plated Aluminum	0.4790	0.0356	92.57	93.85	
		0.4775	0.0214	95.52		
		0.4779	0.0313	93.45		

Summary:

Substrates:	Ceramics, Plastic, Painted metal
Contaminants:	Greases, Oil, Food

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Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
SWR Corporation	SWR One	10	93.55	☑	
Diversey Corporation	Suma Break-Up HD Degreaser	5	93.30	☑	

Conclusion: Both cleaners are effective at removing the DCC-17 soil from all three substrates. The SWR One cleaner is marginally better.