CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2022
DateRun:	07/15/2022
Experimenters:	Zoe Lawson, Tatyanna Moreland Junior, Alexander Symko
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Ceramics, Plastic, Painted metal
PartType:	Coupon
Contaminants:	Hucker's Soil
Cleaning Methods:	
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate the effectiveness of three different Ascend formulations (Ware-washing, All Purpose TM09, and Hard Surface) with three different main ingredient variations (EDTA, DS IDA, and NTA) with All Purpose Testing.
Experimental Procedure:	The third experiment conducted was the Hard Surface formulation with EDTA, DS IDA, and NTA. The formulation consisted of 0.8 parts (EDTA/DS IDA/NTA), 0.6 parts Multirope 1620 (substituting Lutensol), 0.8 parts Glucapon 420, 1.85 parts Texapon 842, and 95.95 parts water. Nine pre-weighed coupons, three of each substrate per cleaner, were soiled with Hucker's Soil Formulation (Jiff 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%) that was distributed onto each coupon using a swab. Dirty weights were recorded after the coupons had dried for two hours at room temperature (68° F). Three coupons of the same substrate were aligned into a Single Line Washing Unit (SLW) with Wypall X60 attached to the cleaning sled. The Wypall X60 reinforced wipe along with the coupons were all sprayed three times with the cleaner and then allowed to soak for 30 seconds. Afterwards the SLW was activated and the coupons were cleaned for 20 cycles. Cleaned coupons dried overnight at room temperature before the final weights were recorded.

Results: Table 1: Hard Surface Results

Product	Substrate	Initial wt of cont.	Final wt of cont.	% Cont Removed	Average	Overall Average
EDTA	Ceramic	0.0956	0.0291	69.56	67.90	71.50
		0.1002	0.0219	78.14		
		0.0841	0.0370	56.00		
	Painted Metal	0.2001	0.0412	79.41	79.58	
		0.1667	0.0331	80.14		
		0.1739	0.0362	79.18		
	Plastic	0.0995	0.0113	88.64	67.02	
		0.1467	0.0672	54.19		
		0.3179	0.1328	58.23		
DS IDA	Ceramic	0.1050	0.0222	78.86	72.96	70.08
		0.0733	0.0220	69.99		
		0.0761	0.0228	70.04		
	Painted Metal	0.3173	0.0629	80.18	77.84	
		0.0863	0.0245	71.61		
		0.1380	0.0252	81.74		
	Plastic	0.2853	0.1121	60.71	59.44	
		0.1499	0.0730	51.30		
		0.1363	0.0459	66.32		
NTA	Ceramic	0.0530	0.0212	60.00	60.48	69.86
		0.0801	0.0282	64.79		
		0.0616	0.0267	56.66		
	Painted Metal	0.1461	0.0378	74.13	74.71	
		0.1933	0.0322	83.34		
		0.1110	0.0370	66.67		
	Plastic	0.1319	0.0291	77.94	74.38	
		0.1434	0.0230	83.96		

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		0.1360	0.0527	61.25		

DS IDA was the most effective at removing the contaminant from ceramic substrates with an average of 72.96% removal, EDTA was slightly less effective at 67.90% removal, followed by NTA at 60.48% as the least effective. EDTA and DS IDA were similar in their removal percentages on painted metal with EDTA being slightly more effective at 79.58% removal and DS IDA at 77.84% removal. NTA was the least effective of the cleaners with an average removal of 74.71% on painted metal but was the most effective at removing the contaminant from plastic. NTA had an average removal percentage of 74.38% with EDTA following with an average removal of 67.02%, and DS IDA at an average removal of 59.44%.

Summary:

Conclusion: The Hard Surface formulation was less effective than the TM09 All Purpose formulation but much more effective than the Warewashing formulation. EDTA, DS IDA, and NTA all averaged around 70 percent overall removal for this formulation, and the averages compared across substrates varied little. This formulation is somewhat effective and is more improved than the warewashing formulation. However, the TM09 All Purpose formulation remains the most effective across all substrates and EDTA/DS IDA/NTA changes.