CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2021

DateRun: 05/23/2021

Experimenters: Anjali Bhagat

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Greases

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: To test the effectiveness of Purple Tiger reformulations in cleaning DCC-12 from aluminum substrates.

Experimental Procedure: Ten reformulated Purple Tiger products were created and tested: PT 2021, PT 2021A, AHS, GSC, Conc, Conc A, Conc AL, Conc 10%, Conc A 10%, and Conc AL 10%. Three aluminum coupons were obtained and weighed for each of the reformulation products being tested. Coupons were then soiled with DCC-12 and baked in the oven at 400°F, for 20 minutes. After baking, coupons were allowed to cool, and a dirty weight was recorded. Coupons were then loaded onto a Gardner-scrub Straight Line Wash unit set to 10 cycles per minute for 20 cycles. Three pumps of cleaner were applied to each of the respective coupons and four pumps of cleaner were applied to the scrubbing blocks. The cleaner was allowed to sit for 30 seconds. Following the 30 seconds of resting, the SLW unit was run to simulate scrub cleaning. Coupons were then removed from the machine and allowed to dry in air for 24 hours. After the drying period, coupons were weighed, and a final clean weight was recorded. Effectiveness of the cleaners was determined.

Results:

Cleaner	Initial wt of cont.	Final wt of cont.	%Cont Removed	% AVG
PT 2021	2.2256	0.264	88.14	89.43
	1.2866	0.1528	88.12	
	1.805	0.1437	92.04	
PT 2021 A	1.3926	0.1482	89.36	109.97
	0.6229	-0.3521	156.53	
	1.0312	0.1646	84.04	
AHS	0.9285	0.1135	87.78	86.32
	0.6946	0.1734	75.04	
	1.328	0.0511	96.15	
GSC	2.2204	0.1726	92.23	85.43
	1.0925	0.1545	85.86	
	1.6931	0.3688	78.22	
Concentration	2.4509	0.2299	90.62	92.79
	1.7976	-0.0158	100.88	
	1.4867	0.1951	86.88	
Concentration A	1.8503	0.1002	94.58	89.74
	1.3699	0.2542	81.44	
	1.4520	0.0987	93.20	
Concentration AL	0.8738	0.138	84.21	89.75
	0.7882	0.0379	95.19	
	1.0975	0.1113	89.86	
Conc 10%	0.5207	0.0423	91.88	92.54
	0.5966	0.0407	93.18	
	0.6448	0.0479	92.57	
Conc A 10%	0.7747	0.0857	88.94	84.12
	0.8169	0.0665	91.86	
	0.3339	0.0950	71.55	
Conc AL 10%	0.6114	0.0219	96.42	92.71
	0.2175	0.0191	91.22	
	0.3055	0.029	90.51	

Summary:

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Conclusion: Concentration and Concentration AL 10% were the most effective reformulations to clean DCC-12 from aluminum substrates, removing an average of 92.79% and 92.71%. The PT 2021 A reformulation was also effective. However, for one of the coupons tested, excess soil beyond what was added was also removed leading to inflated removal values. Next steps are to send the data to the company for further evaluation.