CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2017

DateRun: 07/25/2017

Experimenters: Alicia McCarthy, Hayley Byra

ClientType: General

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Waxes

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate the effectiveness of seven TCE alternatives at removing lubricant from aluminum alloys.

Experimental Procedure: Pre-weighed aluminum coupons were tested for each aqueous cleaner. Coupons were soiled with Lenox Lube Tube Wax (CAS:8002-74-2; 57-11-4; 5989-27-5) using a swab to cover the bottom third of the substrate and dirty weights were recorded. Chemistries were prepared with a five percent dilution except for Micro 90, which had a two percent dilution based on vendor recommendations. Coupons were immersed, three at a time, in a beaker filled with 200ml of the chosen cleaner at room temperature (68 F) for five minutes. Final weights were taken after cleaning.

Results:

Cleaner	Initial wt.	Final wt.	% Removed	Average % Removed
SC Aircraft & Metal Cleaner	0.3824	0.4914	-28.50	-25.35
	0.3109	0.3881	-24.83	
	0.3780	0.4639	-22.72	
Amberclean 527L	0.3243	0.4011	-23.68	-29.67
	0.3315	0.3961	-19.49	
	0.2517	0.3671	-45.85	
Surface Cleanse 930	0.2929	0.3610	-23.25	-18.28
	0.2936	0.3099	-5.55	
	0.3120	0.3932	-26.03	
Micro 90	0.3828	0.4502	-17.61	-42.16
	0.1592	0.2525	-58.61	
	0.1800	0.2705	-50.28	
Solution 2000	0.3203	0.3651	-13.99	-13.95
	0.4090	0.4697	-14.84	
	0.4523	0.5112	-13.02	
Shopmaster	0.4192	0.5134	-22.47	-27.55
	0.3231	0.4038	-24.98	
	0.2262	0.3058	-35.19	
Crystal Simple Green	0.4231	0.4663	-10.21	2.96
	0.2196	0.2133	2.870	
	0.3505	0.2936	16.23	

The Lenox Lube Tube Wax looked saturated with the aqueous cleaners which could have led to having negative final weights. Coupons visually looked cleaner, but it was not reflected in gravimetric results.

Summary:

Substrates:	Aluminum				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	5	-25.35	☐	
Innovative Organics Inc	Amberclean 527 L	5	-29.67	☐	
International Products Corporation	Surface Cleanse Concentrated Neutral 930	5	-18.28	☐	
International Products Corporation	Micro 90 Conc.	2	-42.16	☐	

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EnviroSan Products Ltd	Solution 2000	5	-13.95	☐	
Buckeye International	Shopmaster	5	-27.55	☐	
Simple Green	Crystal Simple Green Industrial Cleaner & Degreaser	5	2.96	☐	

Conclusion: None of the products were very effective at removing Lenox Lube Tube Wax gravimetrically, but signs of removal were observed visually. Next step is to try unheated ultrasonics for five minutes to compare with the drop-in solvents.