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: Lubricating/Lapping Oils

Cleaning Methods: Ultrasonics

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 Blasocut 2000 Universal Lubricant (CAS: 64742-52-5; 61790-44-1; 68608-26-4; 63449-39-8; 107-41-5; 770-35-4) 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) and cleaned with ultrasonics for five minutes. Final weights were taken after cleaning.

Results:

Cleaner	Initial wt.	Final wt.	% Removed	Average % Removed
SC Aircraft & Metal Cleaner	0.0164	0.0034	79.27	71.62
	0.0347	0.0141	59.37	
	0.0265	0.0063	76.23	
Amberclean 527L	0.1494	0.1035	30.72	59.35
	0.0481	0.0181	62.37	
	0.0612	0.0092	84.97	
Surface Cleanse 930	0.0606	0.0072	88.12	86.54
	0.0900	0.0196	78.22	
	0.0819	0.0055	93.28	
Micro 90	0.0797	0.0260	67.38	59.92
	0.0820	0.0422	48.54	
	0.0938	0.0339	63.86	
Solution 2000	0.0622	0.0323	48.07	56.92
	0.0498	0.0154	69.08	
	0.0511	0.0237	53.62	
Shopmaster	0.0634	0.0372	41.32	38.58
	0.0634	0.0373	41.17	
	0.0764	0.0510	33.25	
Crystal Simple Green	0.0515	0.0054	89.51	88.88
	0.0477	0.0076	84.07	
	0.0532	0.0037	93.05	

Ultrasonics improved effectiveness with removing Blasocut 2000 Universal Lubricant from the aluminum coupons. Crystal Simple Green, which was the only positive removal % after unheated immersion for five minutes, looked visually clean and had the highest percent removal.

Summary:

Substrates:	Aluminum				
Contaminants:	Lubricating/Lapping Oils				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	5	71.62	☐	
Innovative Organics Inc	Amberclean 527 L	5	59.35	☐	
International Products Corporation	Surface Cleanse Concentrated Neutral 930	5	86.54	☑	

CLEANING LABORATORY EVALUATION SUMMARY

International Products Corporation	Micro 90 Conc.	2	59.92	☐	
EnviroSan Products Ltd	Solution 2000	5	56.92	☐	
Buckeye International	Shopmaster	5	38.58	☐	
Simple Green	Crystal Simple Green Industrial Cleaner & Degreaser	5	88.88	☑	

Conclusion: Surface Cleanse 930 and Crystal Simple Green were both effective at removing Blasocut 2000 Universal Lubricant. The other aqueous cleaners showed improvement at removing the soil, but more time may need to be added to see effective removal. Next step would be to increase the time of cleaning.