CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2020
DateRun:	10/06/2020
Experimenters:	Nicole Kebler
ClientType:	Bolt, Screw & Nut Manufacturer
ProjectNumber:	Project #1
Substrates:	Aluminum
PartType:	Coupon
Contaminants:	Greases
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric
Purpose:	To evaluate the removal of grease on aluminum coupons using unheated immersion for 15 minutes. *test*
Experimental Procedure:	Four of eight cleaning products were diluted with tap water at room temperature to vendor recommended concentration. Three cleaning products were used at the recommended 100% dilution and the solvent option was also used at 100% for industrial testing; all cleaners and solutions were measured for 200 mL. Pre-weighed aluminum coupons were coated over 1/3 of the coupon with grease that has been provided by the company by using a metal spatula; three coupons were used for each cleaner/solvent. They were allowed a 24-hour dry time at room temperature; their dirty weights were recorded. The coupons were immersed in the cleaners/solvents at room temperature for 15 minutes then were taken out and places on trays with paper towels; they were left to dry for 24 hours. Final weights and observations were recorded and evaluated.

Cleaners/Solvents used:

1. Liquinox (1%)
2. Dimethyl Glutarate (100%)
3. Mirachem (20%)
4. Metalnox (100%)
5. Micro 90 (1%)
6. Smart Solve (100%)
7. SC-Aircraft (5%)
8. Ozzy Juice 3 (100%)

Results: Visual observation showed no removal from coupon. No grease left in cleaner/solution.

Solvent/ Cleaner	initial weight of soil	final weight of soil	% Removal	Average
Liquinox 1%	0.5412	0.5335	1.42	0.55
	-0.3534	-0.3551	-0.48	
	0.6815	0.6767	0.70	
Dimethyl Glutarate 100%	0.4954	0.4875	1.59	-0.49
	0.8039	0.8302	-3.27	
	0.6168	0.6155	0.21	
Mirachem 20%	0.8626	0.8649	-0.27	0.04
	0.9650	0.9688	-0.39	
	0.6192	0.6143	0.79	
Metalnox 100%	0.4965	0.3470	30.11	24.93
	1.0968	0.8956	18.34	
	0.6738	0.4964	26.33	
Micro 90 1%	0.6921	0.6751	2.46	1.77
	0.7768	0.7633	1.74	
	0.6226	0.6157	1.11	
Smart Solve 100%	0.8242	1.1521	-39.78	-42.68
	0.5397	0.8092	-49.94	
	0.7665	1.0603	-38.33	
SC-Aircraft 5%	0.5960	0.5900	1.01	0.81
	0.7601	0.7534	0.88	
	0.7053	0.7014	0.55	
	0.7037	0.7073	-0.51	0.48

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Ozzy Juice 3 100%	0.8546	0.8420	1.47
	0.9896	0.9848	0.49

Summary:

Substrates:	Aluminum
Contaminants:	Greases

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Alconox Inc	Liquinox	1	0.55	☐	
Fisher Scientific	Dimethyl glutarate (CAS: 1119-40-0)	100	-0.49	☐	
Mirachem Corporation	Mirachem 500	20	0.04	☐	
Kyzen Corporation	Metalnox M6960	100	24.93	☐	
International Products Corporation	Micro 90 Conc.	1	1.77	☐	
United Laboratories International	Smart Solve 605	100	-42.68	☐	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	5	0.81	☐	
Chem Free Corporation	SW-3 Ozzy Juice (Improved Low Odor)	100	0.48	☐	

Conclusion:

No cleaners showed removal of grease from aluminum substrate, the next steps are to add additional time and check effectiveness. Rinse step should be evaluated for cleaners that were wet after 24-hour dry time.