CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2023

DateRun: 11/16/2023

Experimenters: Amelia Wagner

ClientType: University

ProjectNumber: Project #2

Substrates: Aluminum

PartType: Coupon

Contaminants: Greases, Waxes

Cleaning Methods:

Analytical Methods: Gravimetric

Purpose: To evaluate the effectiveness of identified low flammability solvents in removing Royco 27A grease and Glyconol Wax.

Experimental Procedure: Three solvents were chosen using previous testing data on their low flammability. Six (three per soil type) pre weighed aluminum coupons were assigned to each solvent for each substrate for a total of 18 aluminum coupons. Half the coupons were soiled with the glyconol wax soil (about 0.5 grams) by placing a small ball of wax onto the bottom third of the coupon, heating it with a heat gun to melt the wax, and then spreading the wax into a strip across the bottom third of the coupons. The other half were soiled with the Royco 27A grease (about 0.5 grams) by spreading on the bottom third of the coupons with a swab. After soiling, the dirty weights of the coupons were recorded. The coupons were then subjected to 20 mins of unheated ultrasonics in their respective cleaners. The coupons were left to air dry overnight before the clean weights were recorded.

Results:

Cleaner	Soil	Initial wt of cont.	Final wt of cont.	%Cont Removed	% AVG	% Overall
Anisole	Royco 27A grease	0.0664	0.0020	96.99	98.04	74.81
		0.1013	0.0024	97.63		
		0.0584	0.0003	99.49		
	Glyconol Wax	0.1369	0.1063	22.35	51.59	
		0.1580	0.0565	64.24		
		0.1748	0.0556	68.19		
Dimethyl Glutarate	Royco 27A grease	0.0843	0.0763	9.49	33.92	31.97
		0.0857	0.0583	31.97		
		0.0776	0.0308	60.31		
	Glyconol Wax	0.1521	0.1179	22.49	30.01	
		0.1355	0.0862	36.38		
		0.1646	0.1133	31.17		
Triethyl Phosphate	Royco 27A grease	0.1240	0.0503	59.44	71.74	66.28
		0.1189	0.0152	87.22		
		0.1203	0.0378	68.58		
	Glyconol Wax	0.1194	0.0137	88.53	60.82	
		0.1294	0.0256	80.22		
		0.2369	0.2044	13.72		

Summary:

Conclusion: Anisole is highly effective in removing Royco 27A grease. It is not effective in removing the Glyconol Wax. Neither the Dimethyl Glutarate or Triethyl Phosphate were effective in removing either soil.