CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2023

DateRun: 09/05/2023

Experimenters: Amelia Wagner

ClientType: Coatings Manufacturer

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Adhesive

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To test the efficacy of solvent blends in removing two types of glue adhesives from stainless steel coupons using unheated immersion methods.

Experimental Procedure: Three pre weighed stainless steel coupons were used per each soil per cleaner for a total of18 coupons. The coupons were then soiled with their respective adhesives, half being soiled with adhesive 5017 and half being soiled with adhesive 5024. The soils were heated to 245 degrees F in order to melt the adhesives to a degree that would allow for a small amount of adhesive to be picked up using a spatula. The adhesive on the spatula was then reheated using a heat gun in order for the adhesive to be able to spread on bottom third of the coupons. The dirty weights of the coupons were then recorded.

The coupons were then subjected to 45 minutes of unheated immersion with a stir bar set at 200 rpm in their respective cleaners. Once the coupons were removed from the cleaners, a manual wipe step was utilized (a singular wipe with a paper towel).

All coupons were allowed to air for 30 minutes before final weights were recorded.

Results:

Cleaner	Soil	Initial wt of cont.	Final wt of cont.	%Cont Removed	% AVG	% Overall
Ethyl 3-Ethoxypropionate 79% + butyl acetate 7% + ethyl lactate 14%	adhesive 5017	1.0334	0.5079	50.85	64.59	48.92
		1.2842	0.3290	74.38		
		0.9711	0.3054	68.55		
	adhesive 5024	0.8123	0.5519	32.06	33.24	
		0.6360	0.4831	24.04		
		0.4588	0.2587	43.61		
Ethyl 3-ethoxypropionate 46% + benzyl benzoate 54%	adhesive 5017	0.6814	0.6048	11.24	35.64	24.57
		1.3022	1.1563	11.20		
		1.4817	0.2299	84.48		
	adheive 5024	1.2073	1.0339	14.36	24.57	
		0.6462	0.6055	6.30		
		0.6020	0.2826	53.06		
D Limonene	adhesive 5017	1.6258	0.5617	65.45	73.03	59.26
		1.2171	0.0764	93.72		
		2.0079	0.8050	59.91		
	adhesive 5024	1.2555	0.6346	49.45	45.50	
		0.7881	0.3218	59.17		
		1.0275	0.7410	27.88		

Performance improved with increasing percentages of Ethyl 3-Ethoxypropionate. Ethyl 3-Ethoxypropionate will be tested at full concentration on its own.

Summary:

Conclusion: None of the solvent blends/solvents were effective in removing either adhesive from stainless steel.