CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2023

DateRun: 05/25/2023

Experimenters: Amelia Wagner, Dylan Labonte

ClientType: Tool Manufacturer

ProjectNumber: Project #2

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Greases, Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To test two solvents in cleaning oil and grease from stainless steel as an alternative to TCE using heated immersion.

Experimental Procedure: Two solvents were identified previously using the Hspip software; SB-33 (D-limonene 85% +Dimethyl glutarate 15%) and SB-31 (Benzyl alcohol 63% + Ethyl lactate 37%). Twelve stainless steel coupons were chosen and intial weights of each were recorded. Half of the coupons were soiled with Hocut 795 and half were soiled with RI-780. The soils were applied to the bottom third of each coupon using a swab. The coupons were then cleaned by their respective solvent using a method of heated immersion. The coupons were immersed for 15 minutes with a stir bar set to 200 rpm at a temperature of 130 F. The coupons were then removed and left to dry overnight. The next morning clean weights were recorded.

Results:

Cleaner	Soil	Substrate	Initial wt of cont.	Final wt of cont.	%Cont Removed	% AVG	% Overall
SB-33	Hocut 795	Stainless Steel	0.0890	0.0017	98.09	96.85	92.84
		Stainless Steel	0.0482	0.0037	92.32		
		Stainless Steel	-0.4185	0.0006	100.14		
	RI 780	Stainless Steel	0.0282	0.0026	90.78	88.82	
		Stainless Steel	0.0320	0.0061	80.94		
		Stainless Steel	0.0286	0.0015	94.76		
SB-31	Hocut 795	Stainless Steel	0.1144	0.0151	86.80	84.73	86.06
		Stainless Steel	0.1247	0.0194	84.44		
		Stainless Steel	0.0721	0.0123	82.94		
	RI 780	Stainless Steel	0.0403	0.0008	98.01	87.38	
		Stainless Steel	0.0301	0.0091	69.77		
		Stainless Steel	0.0515	0.0029	94.37		

The coupons associated with solvent SB31 were still partially wet after being left to air dry overnight.

Summary:

Conclusion: Both SB-33 and SB-31 are effective in removing oil and grease from stainless steel coupons using heated immersion. SB-31 may need a drying application after cleaning in order to be used in a company application.