CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2023

DateRun: 05/23/2023

Experimenters: Amelia Wagner

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 unheated 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 unheated immersion. The coupons were immersed for 15 minutes with a stir bar set to 200 rpm. The coupons were then removed and left to dry overnight. The next morning clean weights were recorded.

Results:

Cleaner	Soil	Substrate	Initial wt	Dirty wt	Clean wt.	Initial wt of cont.	Final wt of cont.	%Cont Removed	% AVG	% Overall
SB-33	Hocut 795	Stainless Steel	59.0069	59.0317	59.0122	0.0248	0.0053	78.63	73.09	79.61
		Stainless Steel	60.3367	60.3888	60.3418	0.0521	0.0051	90.21		
		Stainless Steel	63.8959	63.9072	63.9015	0.0113	0.0056	50.44		
	RI 780	Stainless Steel	63.9891	64.0096	63.993	0.0205	0.0039	80.98	86.12	
		Stainless Steel	63.8677	63.8856	63.8679	0.0179	0.0002	98.88		
		Stainless Steel	59.9843	60.0029	59.9883	0.0186	0.0040	78.49		
SB-31	Hocut 795	Stainless Steel	58.9639	59.0367	59.0014	0.0728	0.0375	48.49	38.64	68.95
		Stainless Steel	60.088	60.1232	60.1211	0.0352	0.0331	5.97		
		Stainless Steel	59.1426	59.2225	59.1734	0.0799	0.0308	61.45		
	RI 780	Stainless Steel	60.2134	60.242	60.2179	0.0286	0.0045	84.27	99.27	
		Stainless Steel	60.1841	60.214	60.1874	0.0299	0.0033	88.96		
		Stainless Steel	49.5706	49.5942	49.5648	0.0236	-0.0058	124.58		

SB-33 was able to completely air dry overnight. SB-31 did not air dry overnight and left pools of solvent on the coupons. The final weights of these coupons include the weight of the left over solvent. This means that SB-31 would most likely be effective with a drying step.

Summary:

Conclusion: SB-33 was successful in removing both soils from the coupons using unheated immersion. SB-31 was successful in removing RI 780 from the coupons using unheated immersion. It was not successful in removing Hocut 795 from the coupons using unheated immersion.