

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2023
 DateRun: 09/29/2023
 Experimenters: Tatyanna Moreland Junior
 ClientType: Lab
 ProjectNumber: Project #8
 Substrates: Stainless Steel
 PartType: Coupon
 Contaminants: Oil
 Cleaning Methods: Ultrasonics
 Analytical Methods: Gravimetric

Purpose: To evaluate the effectiveness of SB-24 (92% Ektapro EEP, 8% t-butyl acetate), SB-32 (81% Ethyl Lactate, 19% Propylene Carbonate), and SB-35 (67% D-limonene, 33% Benzyl Benzoate) in removing 2 oils from stainless steel coupons as a potential replacement for TCE unheated ultrasonics cleaning method.

Experimental Procedure: Three stainless steel coupons were used for each cleaner and the two soils being tested for a total of 18 coupons. The initial weights of each coupon were recorded. The bottom third of every coupon was soiled by applying the corresponding soil with a swab. The dirty weights of each coupon were then recorded. The coupons were then subjected unheated ultrasonics in SB-24, SB-32, and the mixture for 15 mins. After the coupons were cleaned they were left to air dry over night. The next morning, the clean weights of each coupon were taken.

Results:

Soil	Cleaner	Initial Content Weight	Final Content Weight	Percent Content Removed	Average Percent Removed
Rustlick 50/50	SB-35	0.0299	0.0334	-11.71	11.01
		0.0564	0.0368	34.75	
		0.0351	0.0316	9.98	
	SB-24	0.0577	0.0167	71.06	71.59
		0.0493	0.0080	83.77	
		0.0407	0.0163	59.95	
	SB-32	0.0283	0.0176	37.81	54.79
		0.0494	0.0145	70.65	
		0.0474	0.0208	55.91	
Soluble Oil #35	SB-35	0.0287	0.0325	-13.24	-11.6
		0.0208	0.0296	-42.31	
		0.0448	0.3550	20.76	
	SB-24	0.0292	0.0147	49.66	65.15
		0.0433	0.0123	71.59	
		0.0399	0.0103	74.19	
	SB-32	0.0366	0.0236	35.52	29.3
		0.0356	0.0180	49.43	
		0.0239	0.0232	2.93	

Summary:

Substrates:		Stainless Steel			
Contaminants:		Oil			
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
TURI Cleaning lab	SB-24	92% Ektapro EEP 8% t-butyl acetate	72.00	<input type="checkbox"/>	on Rustlick 50/50
TURI Cleaning lab	SB-24	92% Ektapro EEP 8% t-butyl acetate	65.00	<input type="checkbox"/>	on Soluble Oil #35
TURI Cleaning lab	SB-32	Ethyl Lactate 81% (CAS No: 97-64-3) + Propylene Carbonate 19% (CAS No: 108-32-7)	55.00	<input type="checkbox"/>	on Rustlick 50/50
TURI Cleaning lab	SB-32	Ethyl Lactate 81% (CAS No: 97-64-3) + Propylene Carbonate 19% (CAS No: 108-32-7)	29.00	<input type="checkbox"/>	on Soluble Oil #35

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TURI Cleaning lab	SB-35	D-Limonene 67% (CAS No: 5989-27-5) + Benzyl Benzoate 33% (CAS No: 120-51-4)	11.00	<input type="checkbox"/>	on Rustlik 50/50
TURI Cleaning lab	SB-35	D-Limonene 67% (CAS No: 5989-27-5) + Benzyl Benzoate 33% (CAS No: 120-51-4)	-11.00	<input type="checkbox"/>	on Soluble Oil #35

Conclusion:

None of the cleaners were effective at removing the soil. The SB-35 did not seem to air dry well and a small amount stayed on the coupons which skewed some of the final content weights.