

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2024

DateRun: 07/24/2024

Experimenters: Tatyanna Moreland Junior

ClientType: Lab

ProjectNumber: Project #8

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Greases

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To evaluate the effectiveness of SB-27 (t-Butyl Acetate 70% (CAS No: 540-88-5) + Benzyl Alcohol 30% (CAS No: 100-51-6)) and SB-32 (Ethyl Lactate 81% (CAS No: 97-64-3) + Propylene Carbonate 19% (CAS No: 108-32-7)) in removing greases from stainless steel coupons as a potential replacement of TCE with a heated ultrasonic cleaning method.

Experimental Procedure: Three stainless steel coupons were used for each cleaner and soil combination, making a total of twelve coupons. The initial weights of each coupon were recorded. Around 0.1 g of each contaminant was added to the bottom third of the coupon with a swab, and the dirty weights of each coupon were then recorded. The coupons were then subjected to heated ultrasonics in the cleaner for 15 minutes at a temperature of 120 °F. After the coupons were cleaned, they were left to air dry over night, and clean weights of each coupon were taken the following day.

Cleaner	Soil	Initial weight of cont.	Final weight of cont.	% Content Removed	Average % Removal
SB-27	DAW 330B	0.0761	0.0664	12.75	-21.63
		0.0420	0.0550	-30.95	
		0.0863	0.1266	-46.70	
	Slide Gel No. 7	0.0523	0.0106	79.73	62.48
		0.0407	0.0102	74.94	
		0.0476	0.0320	32.77	
SB-32	DAW 330B	0.0188	0.0007	96.28	91.95
		0.0254	0.0027	89.37	
		0.0286	0.0028	90.21	
	Slide Gel No. 7	0.0409	0.0087	78.73	83.02
		0.0355	0.0066	81.41	
		0.0334	0.0037	88.92	

Summary:

Substrates:		Stainless Steel				
Contaminants:		Greases				
Company Name:		Product Name:	Conc.:	Efficiency:	Effective:	Observations:
TURI Cleaning lab		SB-27		23.00	<input type="checkbox"/>	
TURI Cleaning lab		SB-32		86.00	<input checked="" type="checkbox"/>	

Conclusion: Overall, the cleaners were not effective in removing the contaminants, but the only one that worked well enough was SB-32 on DAW 330B. When taking the coupons out of the cleaner, thick clumps of soil clung together and slipped right off the coupons. For the coupons in SB-27, the soil clung together the same way, but it was still attached to the coupon when I took them out, and they even seemed to absorb some of the cleaner and make the averages negative.