CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2024

DateRun: 02/24/2024

Experimenters: Tatyanna Moreland Junior

ClientType: Lab

ProjectNumber: Project #8

Substrates: Brass, Copper

PartType: Coupon

Contaminants: Greases

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To evaluate the effectiveness of SB-2, SB-11, SB-22, SB-23, and SB-32 in removing Slide Gel No. 7 from copper and brass coupons as a potential replacement for TCE with an unheated ultrasonic cleaning method.

Experimental Procedure: Three copper and brass coupons were used for each cleaner being tested, for a total of 15 coupons per cleaner. The initial weights of each coupon were recorded. The bottom third of every coupon was soiled by applying the contaminate with a swab. The dirty weights of each coupon were then recorded. The coupons were then subjected to unheated ultrasonic in the cleaners for 15 minutes. After the coupons were cleaned, they were left to air-dry overnight. The next morning, the clean weights of each coupon were taken.

Results:

Substrate	Cleaner	Coupon #	Initial wt of cont.	Final wt of cont.	%Cont Removed	Average % Removal
Copper	SB-2	2	0.0619	0.0714	-15.35	-74.60
		11	0.0269	0.0675	-150.93	
		16	0.0386	0.0608	-57.51	
	SB-11	16	0.0264	0.0312	-18.18	-12.06
		26	0.0314	0.0298	5.10	
		40	0.0290	0.0357	-23.10	
	SB-22	7	0.0590	0.0124	78.98	82.10
		17	0.0348	0.0022	93.68	
		39	0.0531	0.0140	73.63	
	SB-23	5	0.0305	0.0018	94.10	97.69
		21	0.0529	0.0015	97.16	
		29	0.0390	-0.0007	101.79	
	SB-32	4	0.0329	0.0163	50.46	73.11
		25	0.0276	0.0056	79.71	
		27	0.0406	0.0044	89.16	
Brass	SB-2	7	0.0384	0.0058	84.90	43.33
		14	0.027	0.0299	-10.74	
		22	0.0326	0.0144	55.83	
	SB-11	11	0.0241	0.0175	27.39	26.07
		18	0.0432	0.0177	59.03	
		32	0.0305	0.033	-8.20	
	SB-22	5	0.0355	0.0152	57.18	60.61
		26	0.0412	0.0168	59.22	
		31	0.035	0.0121	65.43	
	SB-23	2	0.0425	0.0105	75.29	86.13
		15	0.0309	0.0013	95.79	
		25	0.0244	0.0031	87.30	
	SB-32	6	0.0572	0.0173	69.76	63.89
		10	0.0533	0.0222	58.35	
		28	0.0343	0.0125	63.56	

Summary:

Substrates:	Brass, Copper

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Contaminants:	Greases				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
TURI Cleaning lab	SB-2	100	59.00	☐	
TURI Cleaning lab	SB-11	100	7.00	☐	
TURI Cleaning lab	SB-22	100	71.00	☐	
TURI Cleaning lab	SB-23	100	92.00	☑	
TURI Cleaning lab	SB-32	100	68.00	☐	

Conclusion: SB-2 and SB-11 did not dry properly overnight, making their final contents higher than their initials. SB-22 and SB-23 seemed like effective alternatives, but due to the "overcleaning" causing negative percent removals, further testing could be done to create the ideal range of cleaning time and contaminants added. SB-32 turned light blue after testing, this was caused by the Ethyl Lactate stripping copper ions from the metal and the mixture will not be used in further testing.