

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2024
 DateRun: 03/01/2024
 Experimenters: Tatyanna Moreland Junior
 ClientType: Lab
 ProjectNumber: Project #8
 Substrates: Brass, Copper
 PartType: Coupon
 Contaminants: Greases
 Cleaning Methods:
 Analytical Methods: Gravimetric

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

Experimental Procedure: Three copper and brass coupons were used for each cleaner being tested, for a total of 12 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 heated ultrasonic at 140 degrees Fahrenheit 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 | 16 | 0.0582 | 0.0583 | -0.17 | 1.84 |
| | | 21 | 0.0616 | 0.0599 | 2.76 | |
| | | 27 | 0.0582 | 0.0565 | 2.92 | |
| | SB-11 | 2 | 0.0609 | 0.0547 | 10.18 | 35.64 |
| | | 29 | 0.0685 | 0.0263 | 61.61 | |
| | | 39 | 0.0763 | 0.0495 | 35.12 | |
| | SB-22 | 16 | 0.0836 | 0.0086 | 89.71 | 73.96 |
| | | 17 | 0.0431 | 0.0212 | 50.81 | |
| | | 40 | 0.0354 | 0.0066 | 81.36 | |
| | SB-23 | 11 | 0.08 | 0.0154 | 80.75 | 87.79 |
| | | 15 | 0.0677 | 0.008 | 88.18 | |
| | | 25 | 0.0665 | 0.0037 | 94.44 | |
| Brass | SB-2 | 11 | 0.036 | 0.0792 | -120.00 | -14.96 |
| | | 23 | 0.0857 | 0.0328 | 61.73 | |
| | | 34 | 0.047 | 0.0407 | 13.40 | |
| | SB-11 | 9 | 0.0472 | 0.0530 | -12.29 | 33.10 |
| | | 15 | 0.0743 | 0.0430 | 42.13 | |
| | | 18 | 0.0380 | 0.0116 | 69.47 | |
| | SB-22 | 2 | 0.0400 | 0.0118 | 70.50 | 43.75 |
| | | 5 | 0.0784 | 0.0270 | 65.56 | |
| | | 14 | 0.0332 | 0.0348 | -4.82 | |
| | SB-23 | 10 | 0.0708 | 0.0319 | 54.94 | 18.38 |
| | | 17 | 0.0822 | 0.0522 | 36.50 | |
| | | 25 | 0.0270 | 0.0368 | -36.30 | |

Summary:

| | | | | | |
|----------------------|----------------------|---------------|--------------------|--------------------------|----------------------|
| Substrates: | | Brass, Copper | | | |
| Contaminants: | | Greases | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| TURI Cleaning lab | SB-2 | 100 | -7.00 | <input type="checkbox"/> | |
| TURI Cleaning lab | SB-11 | 100 | 34.00 | <input type="checkbox"/> | |
| TURI Cleaning lab | SB-22 | 100 | 59.00 | <input type="checkbox"/> | |
| TURI Cleaning lab | SB-23 | 100 | 53.00 | <input type="checkbox"/> | |

Conclusion:

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Overall, the cleaners did not do an effective job removing the contaminants; all coupons were wet with cleaner and/or contaminant after air drying. Copper coupons that were cleaned with SB-22 and SB-23 were less wet but the latter seemed to be more effective.