

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2023
 DateRun: 08/03/2023
 Experimenters: Tatyanna Moreland Junior
 ClientType: Lab
 ProjectNumber: Project #8
 Substrates: Brass
 PartType: Coupon
 Contaminants: Oil
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric

Purpose: To evaluate the effectiveness of SB-11 (46% Ektapro EEP 54% Benzyl Benzoate), SB-22 (79% Ektapro EEP 14% t-butyl acetate 7% propylene carbonate), SB-24 (92% Ektapro EEP 8% t-butyl acetate), and SB-32 (81% ethyl lactate 19% propylene carbonate) in removing production oils from brass coupons as a potential replacement for TCE unheated immersion cleaning method.

Experimental Procedure: Three brass coupons were used for each cleaner for a total of twelve coupons. The initial weights of each coupon were recorded. The bottom third of every coupon was soiled by applying Mobil Vactra Oil #2 with a swab. The dirty weights of each coupon were then recorded. The coupons were then subjected unheated immersion in SB-11, SB-22, SB-24, and SB-32 with the stir bar at 240rpm 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:

| Cleaner | Initial wt of cont. | Final wt of cont. | %Cont Removed | % AVG |
|---------|---------------------|-------------------|---------------|--------|
| SB-11 | 0.1465 | 0.0334 | 77.20 | 85.93 |
| | 0.1719 | 0.0084 | 95.11 | |
| | 0.2442 | 0.0355 | 85.46 | |
| SB-22 | 0.1282 | 0.0023 | 98.21 | 98.77 |
| | 0.1368 | 0.0025 | 98.17 | |
| | 0.1635 | 0.0001 | 99.94 | |
| SB-24 | 0.1493 | -0.0092 | 106.16 | 103.95 |
| | 0.2254 | -0.0080 | 103.55 | |
| | 0.2023 | -0.0043 | 102.13 | |
| SB-32 | 0.2024 | 0.0909 | 55.09 | 69.97 |
| | 0.0848 | 0.0217 | 74.41 | |
| | 0.0541 | 0.0106 | 80.41 | |

The coupons cleaned with SB-24 had lower clean weights than initial weights, this could be due to the solvent stripping the brass coupons.

The soil separated in SB-22 and SB-32, the soil dissolved in SB-11 and SB-24.

Summary:

| Substrates: | | Brass | | | |
|----------------------|----------------------|--|--------------------|-------------------------------------|------------------------------------|
| Contaminants: | | Oil | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| TURI Cleaning lab | SB-11 | 46% Ektapro EEP 54% Benzyl Benzoate | 86.00 | <input checked="" type="checkbox"/> | |
| TURI Cleaning lab | SB-22 | 79% Ektapro EEP 14% t-butyl acetate 7% propylene carbonate | 99.00 | <input checked="" type="checkbox"/> | |
| TURI Cleaning lab | SB-24 | 92% Ektapro EEP 8% t-butyl acetate | 103.00 | <input type="checkbox"/> | Potentially stripped brass coupons |
| TURI Cleaning lab | SB-32 | 81% ethyl lactate 19% propylene carbonate | 70.00 | <input type="checkbox"/> | |

Conclusion: SB-11 and SB-22 are effective cleaners in removing production oil from brass coupons using unheated immersion. SB-32 is a somewhat effective cleaner in removing production oil from brass coupons using unheated immersion. SB-24 should not be used on brass due to the potential of stripping the substrate.