# 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 | ☐ | on Rustlik 50/50 |
| TURI Cleaning lab | SB-24 | 92% Ektapro EEP 8% t-butyl acetate | 65.00 | ☐ | 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 | ☐ | on Rustlik 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 | ☐ | 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 | ☐ | 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 | ☐ | 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.