# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2024

DateRun: 10/23/2024

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-31 (t-Butyl Acetate 70% (CAS No: 540-88-5) and a mixture of (79% EEP + 7% Ethyl Lactate (CAS No: 97-64-3) + 14% t-Butyl Acetate 70% (CAS No: 540-88-5)) in removing lapping compound 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. less than 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 100 °F. After the coupons were cleaned, they were left to air dry overnight, and clean weights of each coupon were taken the following day.

Results:

| Cleaner | Soil | Initial weight of content | Final weight of content | Percent Content Removed | Average Percent Removal | Average Cleaner Percent |
|---|---|---|---|---|---|---|
| SB-31 | Dow Corning High Vacuum Grease | 0.0852 | 0.0044 | 94.84 | 94.43 | 86.63 |
| | | 0.0894 | 0.006 | 93.29 | | |
| | | 0.06 | 0.0029 | 95.17 | | |
| | Apiezon Grease Type M | 0.0207 | 0.0074 | 64.25 | 78.83 | |
| | | 0.0462 | 0.0083 | 82.03 | | |
| | | 0.0306 | 0.003 | 90.20 | | |
| MIXTURE | Dow Corning High Vacuum Grease | 0.0474 | 0.0218 | 54.01 | 78.87 | 83.72 |
| | | 0.0686 | 0.0069 | 89.94 | | |
| | | 0.0626 | 0.0046 | 92.65 | | |
| | Apiezon Grease Type M | 0.0531 | 0.0056 | 89.45 | 88.58 | |
| | | 0.0437 | 0.0055 | 87.41 | | |
| | | 0.0476 | 0.0053 | 88.87 | | |

Summary:

| **Substrates:** | Stainless Steel | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Greases | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| TURI Cleaning lab | SB-31 | | 86.63 | ☑ | |

Conclusion: SB-31 was effective for Dow Corning, and the mixture was effective for Apiezon. Another test would need to be done to verify the cleaner's effectiveness for the opposite contaminant.