# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2021

DateRun: 02/17/2021

Experimenters: Nicole Kebler

ClientType: Bolt, Screw & Nut Manufacturer

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Greases

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric, Visual

Purpose: To test the removal of grease from aluminum coupons using 30 minutes heated immersion.

Experimental Procedure: A solution of 1:15 parts was created for Green Clean, a 50% solution was created for Water Works and Dimethyl Glutarate was used at 100%. Three aluminum coupons per cleaner were pre-weighed for initial weights. They were then soiled 1/3 of the way with black grease that was given to us by the company and were weighed for dirty weights. The solutions were all heated on the hot plate till they reached 105 degrees Fahrenheit. Three coupons per cleaner were placed in the solutions and immersed for 30 minutes. They were then left to dry for over an hour and final weights were taken.

Cleaners Used:

- Dimethyl Glutarate 100%
- Green Clean 1:15
- Water Works 50%

Results: None of the cleaners were effective for the removal of grease from aluminum coupons. Dimethyl Glutarate had the highest at 20% removal but visually the coupons remained dirty with the soil. Green Clean had an average of 3% removal and the cleaner left a line on the aluminum substrate. Lastly, Water Works had an average of 9% removal and visually looked the cleanest but lots of contaminant was left on the coupons.

| Cleaner | initial wt of cont | final wt of cont | cont removal | average |
|---|---|---|---|---|
| 1 | 0.1730 | 0.1406 | 18.73 | 20.78 |
| | 0.1555 | 0.1161 | 25.34 | |
| | 0.1012 | 0.0827 | 18.28 | |
| 2 | 0.2001 | 0.1940 | 3.05 | 3.36 |
| | 0.1264 | 0.1229 | 2.77 | |
| | 0.1195 | 0.1144 | 4.27 | |
| 3 | 0.1092 | 0.0976 | 10.62 | 9.74 |
| | 0.1097 | 0.0952 | 13.22 | |
| | 0.1467 | 0.1388 | 5.39 | |

Summary:

| **Substrates:** | Aluminum |
|---|---|
| **Contaminants:** | Greases |

| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
|---|---|---|---|---|---|
| ST Laboratories, Inc | Sta-Sol 1100 C | 100% | 20.00 | ☐ | Dimethyl Glutarate was not effective for the removal of grease on aluminum coupons. |
| BCS Company | Green Soak cleaner 500 | 1:15 | 3.40 | ☐ | Green Cleaner was not effective for the removal of grease on aluminum coupons. |
| Keteca USA | Water Works Heavy Duty Degreaser | 50% | 9.70 | ☐ | Water Works was not effective for the removal of grease on aluminum coupons. |

Conclusion: Additional testing needs to be done. Increasing the temperature of the cleaners and adding agitation to the cleaners are the next steps. Re-test Dimethyl Glutarate and Water Works adding both those variables.