

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2021
 DateRun: 05/24/2021
 Experimenters: Anjali Bhagat
 ClientType: Cleaner Manufacturer
 ProjectNumber: Project #1
 Substrates: Aluminum
 PartType: Coupon
 Contaminants: Greases
 Cleaning Methods: Manual Wipe
 Analytical Methods: Gravimetric

Purpose: To test the effectiveness of Purple Tiger reformulations in cleaning DCC-17 from aluminum substrates.

Experimental Procedure: en reformulated Purple Tiger products were created and tested; PT 2021, PT 2021A, AHS, GSC, Conc, Conc A, Conc AL, Conc 10%, Conc A 10%, and Conc AL 10%. Three aluminum coupons were obtained and weighed for each of the reformulation products being tested. Coupons were then soiled with DCC-17 and allowed to air dry for 24 hours. After 24 hours of aging, a dirty weight was recorded. Coupons were then loaded onto a Gardner-scrub Straight Line Wash unit set to 10 cycles per minute for 20 cycles. Three pumps of cleaner were applied to each of the respective coupons and four pumps of cleaner were applied to the scrubbing blocks. The cleaner was allowed to sit for 30 seconds. Following the 30 seconds of resting, the SLW unit was run to simulate scrub cleaning. Coupons were then removed from the machine and allowed to dry in air for 24 hours. After the drying period, coupons were weighed, and a final clean weight was recorded. Effectiveness of the cleaners was determined.

Results:

| Cleaner | Initial wt of cont. | Final wt of cont. | %Cont Removed | % AVG |
|------------------|---------------------|-------------------|---------------|-------|
| PT 2021 | 0.1075 | 0.0082 | 92.37 | 72.21 |
| | 0.3294 | 0.0393 | 88.07 | |
| | 0.1766 | 0.1127 | 36.18 | |
| PT 2021 A | 0.0958 | 0.0043 | 95.51 | 93.03 |
| | 0.118 | 0.0047 | 96.02 | |
| | 0.1778 | 0.0221 | 87.57 | |
| AHS | 0.1574 | 0.0222 | 85.9 | 90.48 |
| | 0.338 | 0.0415 | 87.72 | |
| | 0.9716 | 0.0211 | 97.83 | |
| GSC | 0.3677 | 0.0344 | 90.64 | 90.75 |
| | 0.6055 | 0.0862 | 85.76 | |
| | 0.4003 | 0.0167 | 95.83 | |
| Concentration | 0.3032 | 0.1006 | 66.82 | 83.57 |
| | 0.5648 | 0.0482 | 91.47 | |
| | 0.4369 | 0.0331 | 92.42 | |
| Concentration A | 0.553 | -0.0054 | 100.98 | 91.91 |
| | 0.4337 | 0.0474 | 89.07 | |
| | 0.4452 | 0.0637 | 85.69 | |
| Concentration AL | 0.4341 | 0.0217 | 95 | 80.57 |
| | 0.361 | 0.0306 | 91.52 | |
| | 0.3069 | 0.1375 | 55.2 | |
| Conc 10% | 0.1375 | 0.0041 | 97.02 | 95.72 |
| | 0.2092 | 0.0059 | 97.18 | |
| | 0.0895 | 0.0063 | 92.96 | |
| Conc A 10% | 0.1209 | 0.003 | 97.52 | 96.13 |
| | 0.092 | 0.0032 | 96.52 | |
| | 0.1077 | 0.0061 | 94.34 | |
| Conc AL 10% | 0.2113 | 0.006 | 97.16 | 94.78 |
| | 0.1881 | 0.007 | 96.28 | |
| | 0.1143 | 0.0104 | 90.9 | |

Summary:

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Conclusion: Concentration A 10% and Concentration 10% were the most effective reformulations to clean DCC-17 from aluminum substrates, removing an average of 96.13% and 95.72%. The Concentration AL 10% reformulation was also effective with an average of 94.78% removing power. Next steps are to send the data to the company for further evaluation.