

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2023
 DateRun: 04/14/2023
 Experimenters: Siddhant Trivedi, Serena Burkinshaw, Dylan Labonte
 ClientType: Lab
 ProjectNumber: Project #6
 Substrates: Stainless Steel
 PartType: Coupon
 Contaminants: Lubricating/Lapping Oils, Oil
 Cleaning Methods: Vacuum Cycle Nucleation
 Analytical Methods: Gravimetric

Purpose: To determine the efficacy of aqueous cleaners compared to water utilizing VCN equipment.

Experimental Procedure: Eighteen pre weighed stainless steel coupons were used, three per soil per cleaner. Half of the coupons were soiled by swabbing the bottom third of the coupons with Production Soil, while the other half of the coupons were soiled with DTE Cutting Oil. The dirty weights of all coupons were then recorded. The coupons were then subjected to a one-minute heated cycle at 140 degrees F in the VCN using water, Alcojet 1% concentration, and LF2100 1% concentration. The coupons were then removed and left to air dry overnight. The next day the clean weights of the coupons were recorded.

Results:

| Cleaner | soil | Initial wt of cont. | Final wt of cont. | %Cont Removed | % AVG | % Overall |
|---------------|--------------------------|------------------------|-------------------------|------------------|--------|--------------|
| Water | Production Soil | 0.0348 | 0.0017 | 95.11 | 95.36 | 97.64 |
| | | 0.0380 | 0.0030 | 92.11 | | |
| | | 0.0693 | 0.0008 | 98.85 | | |
| | Mobil DTE Cutting Oil | 0.1500 | 0.0027 | 98.20 | 99.92 | |
| | | 0.0827 | -0.0018 | 102.18 | | |
| | | 0.1610 | 0.0010 | 99.38 | | |
| Alcojet 1% | Production Soil | 11.5932 | 0.0000 | 100.00 | 100.01 | 99.69 |
| | | 11.7287 | 0.0010 | 99.99 | | |
| | | -11.5436 | 0.0047 | 100.04 | | |
| | Mobil DTE Cutting Oil | 0.1142 | 0.0009 | 99.21 | 99.38 | |
| | | 0.1538 | 0.0015 | 99.02 | | |
| | | 0.1909 | 0.0002 | 99.90 | | |
| LF2100 1% | Production Soil | 0.0867 | 0.0000 | 100.00 | 99.16 | 98.84 |
| | | 0.0726 | 0.0003 | 99.59 | | |
| | | 0.0715 | 0.0015 | 97.90 | | |
| | Mobil DTE Cutting Oil | 0.1408 | 0.0022 | 98.44 | 98.52 | |
| | | 0.0945 | 0.0012 | 98.73 | | |
| | | 0.1119 | 0.0018 | 98.39 | | |

Summary:

| | | | | | |
|------------------------------------|--|-------------------------------|---------------|--------------------|-------------------------------------|
| Substrates: | | Stainless Steel | | | |
| Contaminants: | | Lubricating/Lapping Oils, Oil | | | |
| Company Name: | | Product Name: | Conc.: | Efficiency: | Effective: |
| Water | | Water | 100 | 98.00 | <input checked="" type="checkbox"/> |
| Alconox Inc | | Alcojet | 1 | 99.00 | <input checked="" type="checkbox"/> |
| International Products Corporation | | LF 2100 (Liquid Foam Cleaner) | 1 | 99.00 | <input checked="" type="checkbox"/> |

Conclusion: Water, Alcojet 1% concentration, and LF2100 1% concentration are highly effective in removing both soils from stainless steel utilizing VCN methods.