# CLEANING LABORATORY EVALUATION SUMMARY

| | |
|---|---|
| SCL #: | 2014 |
| DateRun: | 09/23/2014 |
| Experimenters: | Junhee Cho, Loc Nguyen, George Liang |
| ClientType: | Cleaner Manufacturer |
| ProjectNumber: | Project #2 |
| Substrates: | Stainless Steel |
| PartType: | Coupon |
| Contaminants: | Greases |
| Cleaning Methods: | Manual Wipe |
| Analytical Methods: | Gravimetric |
| Purpose: | To evaluate supplied products for grease removal from various surface found on a boat. |
| Experimental Procedure: | The two cleaning products were used at the requested dilutions at room temperature for all boat cleaning. Preweighed stainless steel coupons were coated with lithium grease using a handheld swab and allowed to dry for 2 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added.<br>Three coupons were placed into a Gardner Straight Line Washability unit. A Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 1-2 sprays of cleaning solutions. Each coupon was sprayed 1-2 times with the same cleaning solution. The cleaning unit was run for 30 cycles (~45 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded, efficiencies were calculated and recorded. Additional rounds of cleaning were conducted until the stainless-steel coupons were completely free of lithium grease.<br>Chemistries Evaluated: Wechem Boat Soap (3.125%); West Marine Heavy Duty Boat Soap 3.125% |
| Results: | After the initial 45 seconds of cleaning, all products had limited success in removing the soiled coupons. An additional 45 seconds of cleaning using a new wipe improved removal. The table lists the amount of soil added and the calculated efficiency for each coupon cleaned. The second table summarizes the removal for each product after each 30 cycles. |

| Cleaner | % Removed for after each run | | | | | |
|---|---|---|---|---|---|---|
| WeChem | Soil added | 45 sec | 90 sec | 135 sec | 180 sec | 225 sec |
| | 0.5055 | 48.98 | 82.65 | 96.93 | 98.93 | 99.09 |
| | 0.5035 | 29.51 | 76.01 | 96.68 | 99.09 | 99.15 |
| | 0.5685 | 44.93 | 82.71 | 97.84 | 98.91 | 98.28 |
| West Marine Heavy Duty Boat Soap 3.125% - Stainless Steel | | | | | | |
| | 0.5232 | 37.88 | 68.75 | 89.53 | 98.18 | 99.31 |
| | 0.5025 | 8.20 | 63.88 | 86.37 | 98.47 | 99.30 |
| | 0.5368 | 27.29 | 70.94 | 89.47 | 98.92 | 99.70 |

Table of Average removal after each 30 cycles

| Round 1 Cleaning | % Removed |
|---|---|
| WeChem 3.125% - Stainless Steel | 41.14 |
| West Marine 3.125% - Stainless Steel | 24.46 |
| | |
| Round 2 Cleaning | |
| WeChem 3.125% - Stainless Steel | 80.46 |
| West Marine 3.125% - Stainless Steel | 67.86 |
| | |
| Round 3 Cleaning | |
| WeChem 3.125% - Stainless Steel | 97.15 |
| West Marine 3.125% - Stainless Steel | 88.46 |
| | |
| Round 4 Cleaning | |

# CLEANING LABORATORY EVALUATION SUMMARY

| | |
|---|---|
| WeChem 3.125% - Stainless Steel | 98.98 |
| West Marine 3.125% - Stainless Steel | 98.52 |
| | |
| Round 5 Cleaning | |
| WeChem 3.125% - Stainless Steel | 98.84 |
| West Marine 3.125% - Stainless Steel | 99.44 |

Summary:

| **Substrates:** | Stainless Steel | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Greases | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| West Marine | West Marine Heavy Duty Boat Soap | 3.125 | 88.52 | ☑ | |
| Wechem Inc. | Booyah Cleaner Degresaser 2X | 3.125 | 97.15 | ☑ | |

Conclusion:

The WeChem product required fewer cycles to completely remove the lithium grease from the surface as compared with the West Marine product.