

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004
 DateRun: 12/14/2004
 Experimenters: Jason Marshall
 ClientType: General
 ProjectNumber: Project #1
 Substrates: Stainless Steel
 PartType: Coupon
 Contaminants: Oil, Starch
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric

Purpose: To evaluate successful cleaners at lower concentrations.

Experimental Procedure: The top two products from the previous trials were diluted with DI water to two concentrations, 5 and 2.5%. The products were then heated to 200 F on a hot plate. The client's current cleaner was also used at 3% at the same temperature.

Fifteen preweighed stainless steel coupons were coated with the supplied cotton seed oil/starch mix and allowed to sit for 24 hours. Coupons were then weighed a second time to determine the amount of soil that was added. Three coupons were cleaned in each product for sixty minutes with no agitation. Cleaning was followed by a 15 second rinse in a tap water bath at 120 F and air blow off for 30 seconds at room temperature. Once dry, coupons were weighed a third time and efficiencies were calculated for each product tested.

Results: The Organic Cleaner/Degreaser at both concentrations worked as well as the client's current cleaner, removing over 98% of the oil after an hour of soaking at 200 F. Both concentrations of VPW SC1000 removed over 96% of the oil/starch mix. The table below lists the amount of soil added, the amount remaining and the percent removed for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|------------------|------------|----------|-----------|
| Liquid Chembrite | 0.4222 | 0.0003 | 99.93 |
| | 0.2230 | 0.0037 | 98.34 |
| | 0.3036 | 0.0022 | 99.28 |
| Organic D/C 5% | 0.3765 | 0.0016 | 99.58 |
| | 0.3343 | 0.0036 | 98.92 |
| | 0.3145 | 0.0026 | 99.17 |
| Organic D/C 2.5% | 0.1925 | 0.0013 | 99.32 |
| | 0.3677 | 0.0032 | 99.13 |
| | 0.1455 | 0.0021 | 98.56 |
| VPW SC 1000 5% | 0.4527 | 0.0094 | 97.92 |
| | 0.3108 | 0.0157 | 94.95 |
| | 0.3669 | 0.0073 | 98.01 |
| VPW SC 1000 2.5% | 0.3897 | 0.0070 | 98.20 |
| | 0.3775 | 0.0168 | 95.55 |
| | 0.4202 | 0.0128 | 96.95 |

Summary:

| Substrates: | | Stainless Steel | | | | |
|--|--|-----------------|-------------|-------------------------------------|---------------|--|
| Contaminants: | | Oil, Starch | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: | |
| Rochester Midland Corporation | Liquid Chembrite | 3 | 99.18 | <input checked="" type="checkbox"/> | | |
| 1st Envirosafety Inc. - No Longer Exists | Organic Cleaner/Degreaser - For Comparison Purposes Only | 5 | 99.22 | <input checked="" type="checkbox"/> | | |
| 1st Envirosafety Inc. - No Longer Exists | Organic Cleaner/Degreaser - For Comparison Purposes Only | 2.5 | 99.00 | <input checked="" type="checkbox"/> | | |
| Orison Marketing | VPW SC 1000 | 5 | 96.96 | <input checked="" type="checkbox"/> | | |
| Orison Marketing | VPW SC 1000 | 2.5 | 96.90 | <input checked="" type="checkbox"/> | | |

Conclusion:

CLEANING LABORATORY EVALUATION SUMMARY

The products will be tested on supplied contaminated coupons under similar conditions.