# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2016

DateRun: 04/05/2016

Experimenters: Vinh Tran, Sabrina Apel

ClientType: General

ProjectNumber: Project #1

Substrates: Aluminum, Brass, Stainless Steel

PartType: Coupon

Contaminants: Lubricating/Lapping Oils

Cleaning Methods:

Analytical Methods: Gravimetric

Purpose: To eliminate the use of N-Propyl Bromide in cleaning operations.

Experimental Procedure: One cleaner was tested at room temperature on aluminum, brass, and stainless-steel coupons to evaluate how Castrol Performance Bio NC Lite, Navi Guard Way Lube 32, and Water-Soluble Coolant soils were cleaned. Preweighed coupons were coated with each supplied soil using a handheld swab for each substrate and weighed a second time to determine the amount of soil added. Each cleaner was put in a beaker and three coupons were immersed into the solution for 5 minutes. The coupons were then stood upright to air dry for 15 minutes and then placed on a tray. There was no rinse. Once dry, final weights were measured and efficiency calculated for each coupon cleaned.

Results:

| Contaminant | Substrate | Initial wt of cont. | Final wt of cont. | %Cont Removed |
|---|---|---|---|---|
| Castrol | Aluminum | 0.1079 | 0.0005 | 99.54 |
| Performance | Aluminum | 0.0728 | 0.0001 | 99.86 |
| | Aluminum | 0.0818 | 0.0002 | 99.76 |
| | Brass | 0.1257 | 0.0040 | 96.82 |
| | Brass | 0.1118 | 0.0018 | 98.39 |
| | Brass | 0.0757 | 0.0001 | 99.87 |
| | Stainless | 0.1210 | 0.0012 | 99.01 |
| | Stainless | 0.1172 | 0.0004 | 99.66 |
| | Stainless | 0.1414 | 0.0001 | 99.93 |
| Navi Guard | Aluminum | 0.1606 | 0.0005 | 99.69 |
| Way Lube 32 | Aluminum | 0.1789 | 0.0002 | 99.89 |
| | Aluminum | 0.1692 | 0.0004 | 99.76 |
| | Brass | 0.2668 | 0.0008 | 99.70 |
| | Brass | 0.1363 | 0.0026 | 98.09 |
| | Brass | 0.1749 | 0.0010 | 99.43 |
| | Stainless | 0.2093 | 0.0008 | 99.62 |
| | Stainless | 0.2248 | 0.0015 | 99.33 |
| | Stainless | 0.2166 | 0.0014 | 99.35 |
| Water- | Aluminum | 0.0153 | 0.0011 | 92.81 |
| Soluble | Aluminum | 0.0194 | 0.0009 | 95.36 |
| Coolant | Aluminum | 0.0094 | 0.0011 | 88.30 |
| | Brass | 0.0074 | 0.0010 | 86.49 |
| | Brass | 0.0101 | 0.0022 | 78.22 |
| | Brass | 0.0067 | 0.0007 | 89.55 |
| | Stainless | 0.0050 | 0.0001 | 98.00 |
| | Stainless | 0.0054 | 0.0005 | 90.74 |
| | Stainless | 0.0078 | 0.0005 | 93.59 |

Summary:

| **Substrates:** | Aluminum, Brass, Stainless Steel | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Lubricating/Lapping Oils | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| DuPont | Vertrel Sion | 100 | 99.20 | ☑ | Castrol Performance Bio NC Lite |

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|---|---|---|---|---|---|
| DuPont | Vertrel Sion | 100 | 99.43 | ☑ | Navi Guard Way Lube 32 |
| DuPont | Vertrel Sion | 100 | 0.00 | ☐ | Water-Soluble Coolant |

Conclusion:

DuPont Vertrel Sion efficiently removed the three soils, Castrol Performance Bio NC Lite, Navi Guard Way Lube 32, and Water-Soluble Coolant on all three substrates at room temperature. The Castrol Performance Bio NC Lite soil with Sion was cleaned with an efficiency of 99.20%. The Navi Guard Way Lube 32 was most efficiently cleaned with Sion, with an efficiency of 90.43%. The Water-Soluble Coolant soil was least efficiently cleaned with Sion, with an efficiency of 90.34%.