# CLEANING LABORATORY EVALUATION SUMMARY

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|---|---|
| SCL #: | 2004 |
| DateRun: | 07/26/2004 |
| Experimenters: | Jason Marshall, Heidi Wilcox, Andy Harris |
| ClientType: | Metal Finishing |
| ProjectNumber: | Project #2 |
| Substrates: | Steel |
| PartType: | Part |
| Contaminants: | Coatings |
| Cleaning Methods: | Ultrasonics |
| Analytical Methods: | Gravimetric, Performance Test |
| Purpose: | To reevaluate products on supplied parts. |
| Experimental Procedure: | Five products that were found to be effective on all three soils were used at 120 F in a Crest Ultrasonic 40 KHz tank. Four products were used at 5% dilutions in 600 ml beakers and the fifth was used as received from the client in a 400 ml beaker. Each beaker was submersed in the tank filled with water at 120 F and degassed for 5 minutes.<br>The preweighed parts were contaminated with Castrol Rustilo 4163 (64742-46-7, 8002-74-2, 34590-94-8)and the weighed again. Five parts were cleaned in each product for five minutes with ultrasonic energy. The parts were rinsed in tap water at 120 F for 30 seconds and dried using air blow off at room temperature for 30 seconds. Parts were weighed a final time and efficiencies were calculated. Parts were then packaged and sent back to client to determine effectiveness. |
| Results: | The five products appeared to remove all of the Rustilo. Only two parts with ball bearings had less than 95% removal with ultrasonics. The table below lists the initial soil weight, final weight and cleaning efficiency for each part cleaned. |

| | Initial wt | Final wt | % Removed |
|---|---|---|---|
| Beyond 2004 | 0.4902 | -0.0001 | 100.02 |
| | 0.1483 | 0.0001 | 99.93 |
| | 0.409 | -0.0010 | 100.24 |
| | 0.3925 | 0.0206 | 94.75 (ball bearing) |
| | 0.0397 | -0.0016 | 104.03 |
| Aeromaster | 0.1285 | 0.0005 | 99.61 |
| | 0.1798 | 0.0001 | 99.94 |
| | 0.4602 | 0.0037 | 99.20 |
| | 0.2213 | 0.0159 | 92.82 (ball bearing) |
| | 0.0811 | -0.0004 | 100.49 |
| M-Aero | 0.1325 | 0.0001 | 99.92 |
| | 0.1835 | -0.0010 | 100.54 |
| | 0.4464 | -0.0006 | 100.13 |
| | 2.1066 | -0.0002 | 100.01 |
| | 0.0113 | -0.001 | 108.85 |
| 815 QR | 0.1665 | -0.0012 | 100.72 |
| | 0.1416 | -0.0005 | 100.35 |
| | 0.3838 | -0.0006 | 100.16 |
| | 0.3373 | -0.0005 | 100.15 |
| | 0.0757 | -0.0012 | 101.59 |
| Alkalume | 0.1018 | 0.0006 | 99.41 |
| | 0.1244 | -0.0012 | 100.96 |
| | 0.3699 | -0.0004 | 100.11 |
| | 0.1326 | -0.0010 | 100.75 |
| | 0.0225 | -0.0004 | 101.78 |

Summary:

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|---|---|
| **Substrates:** | Steel |

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| Contaminants: | Coatings | | | | |
|---|---|---|---|---|---|
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| Today & Beyond | Beyond 2004 | 5 | 99.80 | ☑ | Trouble on the ball bearings |
| Buckeye International | Aeromaster | 5 | 98.41 | ☑ | Trouble on the ball bearings |
| Church & Dwight Co Inc. | Armakleen M Aero NS | 5 | 101.89 | ☑ | |
| Brulin Corporation | 815 QR | 5 | 100.59 | ☑ | |
| McGean Rohco Inc | Alkalume LN | 100 | 100.60 | ☑ | |

Conclusion: The five group of parts were sent back to be plated.