

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004
 DateRun: 07/12/2004
 Experimenters: Jason Marshall, Heidi Wilcox, Andy Harris
 ClientType: Metal Finishing
 ProjectNumber: Project #2
 Substrates: Aluminum
 PartType: Coupon
 Contaminants: Coatings
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric

Purpose: To evaluate successful products on the second supplied contaminant.

Experimental Procedure: Five cleaners were selected from the previous trial. All products were diluted to 5% using DI water in 600 ml beakers. All nine products were heated to 120 F on a hot plate. Fifteen preweighed aluminum coupons were coated with client supplied coating, Castrol Industries Rustilo DW 924 (64742-88-7, 64742-95-6, 64741-89-5, 64741-97-5, 64742-53-6, 95-63-6), using a hand held swab and then weighed a second time to determine the amount of soil added. Three coupons were cleaned in each solution for 5 minutes using stir-bar agitation. Coupons were rinsed in tap water for 15 seconds at 120 F, followed by air blow off at room temperature. Once dry, coupons were weighed a final time and efficiencies for each cleaner were calculated.

Results: All five products removed over 99% of the rust preventative coating. The table below lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|-------------|------------|----------|-----------|
| Beyond 2004 | 0.2034 | -0.0013 | 100.64 |
| | 0.1339 | 0.0001 | 99.93 |
| | 0.1758 | 0.0002 | 99.89 |
| Aeromaster | 0.1281 | 0.0007 | 99.45 |
| | 0.1751 | 0.0004 | 99.77 |
| | 0.1752 | 0.0004 | 99.77 |
| 1400 GD | 0.3453 | 0.0001 | 99.97 |
| | 0.2659 | -0.0003 | 100.11 |
| | 0.2920 | -0.0004 | 100.14 |
| M Aero | 0.2214 | -0.0003 | 100.14 |
| | 0.2546 | -0.0007 | 100.27 |
| | 0.1804 | -0.0002 | 100.11 |
| 815 QR | 0.2150 | -0.0002 | 100.09 |
| | 0.1106 | -0.0002 | 100.18 |
| | 0.2082 | -0.0003 | 100.14 |

Summary:

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|-------------------------|----------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Aluminum | | | | |
| Contaminants: | Coatings | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Today & Beyond | Beyond 2004 | 5 | 100.15 | <input checked="" type="checkbox"/> | |
| Buckeye International | Aeromaster | 5 | 99.67 | <input checked="" type="checkbox"/> | |
| Brulin Corporation | Aquavantage 1400 | 5 | 100.07 | <input checked="" type="checkbox"/> | |
| Church & Dwight Co Inc. | Armakleen M Aero NS | 5 | 100.17 | <input checked="" type="checkbox"/> | |
| Brulin Corporation | 815 QR | 5 | 100.14 | <input checked="" type="checkbox"/> | |

Conclusion: The same five products will be used on the third supplied contaminant under the same conditions.