

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 identify alternative alkaline products for Solvon PB.

Experimental Procedure: Seven cleaners were selected from the laboratories database of past testing based on supplied data from client. Two client supplied products were included as well. 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. Twenty-seven preweighed aluminum coupons were coated with client supplied coating, Castrol Industries Rustilo 4163 (64742-46-7, 8002-74-2, 34590-94-8), 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 nine products removed over 92% of the rust preventative coating within the five minutes of immersion cleaning. 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 |
|------------------|------------|----------|-----------|
| Inproclean 3800 | 0.1495 | 0.0035 | 97.66 |
| | 0.1528 | 0.0283 | 81.45 |
| | 0.1566 | 0.0009 | 99.43 |
| Daraclean 282 GF | 0.1674 | 0.0013 | 99.22 |
| | 0.2265 | 0.0105 | 95.36 |
| | 0.1963 | 0.0053 | 97.30 |
| Beyond 2004 | 0.1275 | -0.0045 | 103.53 |
| | 0.1304 | -0.0019 | 101.46 |
| | 0.1673 | 0.0006 | 99.64 |
| Aeromaster | 0.1747 | -0.0002 | 100.11 |
| | 0.2008 | 0.0006 | 99.70 |
| | 0.2041 | 0.0005 | 99.76 |
| Aircraft & Metal | 0.1692 | 0.0168 | 90.07 |
| | 0.1775 | 0.0041 | 97.69 |
| | 0.1865 | 0.0051 | 97.27 |
| 1400 GD | 0.2394 | -0.0008 | 100.33 |
| | 0.2009 | -0.0004 | 100.20 |
| | 0.1733 | -0.0003 | 100.17 |
| M Aero-NS | 0.1272 | 0.0010 | 99.21 |
| | 0.1619 | 0.0008 | 99.51 |
| | 0.1410 | 0.0053 | 96.24 |
| EZE 774 | 0.1432 | 0.0063 | 95.60 |
| | 0.2081 | 0.0072 | 96.54 |
| | 0.1495 | 0.0029 | 98.06 |
| 815 QR | 0.1749 | 0.0005 | 99.71 |
| | 0.1616 | 0.0010 | 99.38 |
| | 0.1760 | 0.0000 | 100.00 |

Summary:

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| Substrates: | Aluminum |
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|-------------------------|---|---------------|--------------------|-------------------------------------|----------------------|
| Contaminants: | Coatings | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Oakite Products | Inproclean 3800 | 5 | 92.85 | <input checked="" type="checkbox"/> | |
| Magnaflux | Daraclean 282 GF | 5 | 97.30 | <input checked="" type="checkbox"/> | |
| Today & Beyond | Beyond 2004 | 5 | 101.54 | <input checked="" type="checkbox"/> | |
| Buckeye International | Aeromaster | 5 | 99.86 | <input checked="" type="checkbox"/> | |
| Gemtek Products | SC Aircraft & Metal Cleaner Super Concentrate | 5 | 95.01 | <input checked="" type="checkbox"/> | |
| Brulin Corporation | Aquavantage 1400 | 5 | 100.24 | <input checked="" type="checkbox"/> | |
| Church & Dwight Co Inc. | Armakleen M Aero NS | 5 | 98.32 | <input checked="" type="checkbox"/> | |
| Calgon Corporation | EZE 774 | 5 | 96.73 | <input checked="" type="checkbox"/> | |
| Brulin Corporation | 815 QR | 5 | 99.70 | <input checked="" type="checkbox"/> | |

Conclusion: The five products with over 98% removal efficiencies will used on the second supplied rust preventative under the same conditions.