

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2003
DateRun: 09/15/2003
Experimenters: Jason Marshall
ClientType: Tool Manufacturer
ProjectNumber: Project #1
Substrates: Steel
PartType: Coupon
Contaminants: Coatings
Cleaning Methods: Immersion/Soak
Analytical Methods: Gravimetric

Purpose: To evaluate successful cleaners from previous trials on second contaminant

Experimental Procedure: The eight products from the first trial were used again in this trial. Six products were used at full strength and two were products (Oakite Products and Gemtek Products) were used at 10%, diluted with DI water. Six products were used at room temperature and two products (Metabolix and Gemtek) were used at 120 F based on success from previous trial. Clean took place in 250 ml beakers with no agitation. The process utilized no water rinse and only used compressed air to dry/rinse the parts. Twenty-four preweighed steel coupons were coated with Rochester Midland Corp RI 780 (8052-41-3, 95-63-6) using a hand held swab. The coating then heated with a Master Appliance Heat gun at 300 F for 10 minutes. After cooling to room temperature, a second weighing was performed to determine the amount of soil that was added. Three coupons were cleaned in each solution for 5 minutes with no agitation. After drying with the air blow off, coupons were weighed a final time to determine the cleaning efficiencies of each product.

Results: All eight products removed over 88% of the coating from the steel coupons. Five removed over 92% of the coating. Solvent Kleene D Greeze 1000 was the most successful, removing 100% of the rust preventative in the five minutes of cleaning. The table below lists the amount of soil added and remaining for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|-----------------------------|------------|----------|-----------|
| AK 225 | 0.0544 | -0.0001 | 100.18 |
| | 0.0152 | 0.0014 | 90.79 |
| | 0.0180 | 0.0007 | 96.11 |
| DS 108 | 0.0250 | 0.0005 | 98.00 |
| | 0.0115 | 0.0011 | 90.43 |
| | 0.0242 | 0.0023 | 90.50 |
| Beyond 2008 | 0.0334 | 0.0037 | 88.92 |
| | 0.0085 | 0.0006 | 92.94 |
| | 0.0097 | 0.0017 | 82.47 |
| D Greeze 1000 | 0.0070 | -0.0001 | 101.43 |
| | 0.0108 | 0.0002 | 98.15 |
| | 0.0156 | -0.0002 | 101.28 |
| 278 Super Solv | 0.0130 | 0.0009 | 93.08 |
| | 0.0282 | 0.0012 | 95.74 |
| | 0.0165 | 0.0018 | 89.09 |
| Inproclean 3800 | 0.0161 | 0.0016 | 90.06 |
| | 0.0313 | 0.0023 | 92.65 |
| | 0.0379 | 0.0057 | 84.96 |
| E3HB | 0.0305 | 0.0003 | 99.02 |
| | 0.0129 | 0.0004 | 96.90 |
| | 0.0215 | 0.0025 | 88.37 |
| SC Aircraft & Metal Cleaner | 0.0155 | 0.0002 | 98.71 |
| | 0.0093 | 0.0005 | 94.62 |
| | 0.0089 | 0.0003 | 96.63 |

Summary:

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| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
|------------------------|---|--------|-------------|-------------------------------------|---------------|
| AGA Chemical | AK 225 | 100 | 95.69 | <input checked="" type="checkbox"/> | |
| Dysol | DS 108 Wipe Solvent | 100 | 92.98 | <input checked="" type="checkbox"/> | |
| Today & Beyond | Beyond 2008 | 100 | 88.11 | <input checked="" type="checkbox"/> | |
| AW Chesterton | 278 Super Solv | 100 | 92.64 | <input checked="" type="checkbox"/> | |
| Transene Company, Inc. | D Greeze 1000 | 100 | 100.29 | <input checked="" type="checkbox"/> | |
| Oakite Products | Inproclean 3800 | 10 | 89.22 | <input checked="" type="checkbox"/> | |
| Metabolix Inc | Metabolix E3HB | 100 | 94.76 | <input checked="" type="checkbox"/> | |
| Gemtek Products | SC Aircraft & Metal Cleaner Super Concentrate | 10 | 96.65 | <input checked="" type="checkbox"/> | |

Conclusion: Increasing cleaning time may improve the efficiencies of the cleaners. A follow up trial will be conducted for the products with less than 95% efficiency.