

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008
 DateRun: 04/03/2008
 Experimenters: Shweta Bansal
 ClientType: Lab
 ProjectNumber: Project #1
 Substrates: Aluminum
 PartType: Coupon
 Contaminants: Oil
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric

Purpose: Removing containments off of aluminum surfaces using non toxic cleaning products.

Experimental Procedure: Basic cleaning performance testing was conducted using ASTM G122 as the bases for cleaning. Products were based on the compatibility of substrate and removal of foreign substance. Used 5% concentration and heated the samples at 135F. The coupons were immersed in a product for 5 minutes, rinsed for 30 seconds in tap water at 120F and dried in 30 seconds using compressed air is room temperature. Coupons were coated with used oil. Using a handheld swab and allowed to dry for 144 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added. After cleaning process, the final weights were recorded, efficiencies were calculated and recorded.

Results:

| Cleaner | Initial wt | Final wt | % Removed |
|----------------------------------|------------|----------|-----------|
| california parts washer solution | | | |
| | 0.4668 | 0.0425 | 90.90 |
| | 0.8404 | 0.0089 | 98.94 |
| | 0.6322 | 0.0047 | 99.26 |
| valtron sp 2275 | | | |
| | 0.9311 | 0.0819 | 91.20 |
| | 1.2387 | 0.0318 | 97.44 |
| | 0.7988 | 0.0760 | 90.49 |
| shopmaster LPH | | | |
| | 0.8495 | 0.0966 | 88.63 |
| | 0.7932 | 0.0876 | 88.96 |
| | 0.9868 | 0.0805 | 91.84 |
| sea wash blue | | | |
| | 0.8015 | 0.0123 | 98.47 |
| | 0.9927 | 0.0095 | 99.04 |
| | 0.8976 | 0.0212 | 97.64 |
| sc aircraft and metal cleaner | | | |
| | 0.9623 | 0.0551 | 94.27 |
| | 0.5892 | 0.0363 | 93.84 |
| | 0.704 | 0.0203 | 97.12 |
| nab 9000 | | | |
| | 0.9941 | 0.0640 | 93.56 |
| | 0.8911 | 0.0672 | 92.46 |
| | 0.8450 | 0.0714 | 91.55 |

Summary:

| | | | | | |
|----------------------|----------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Aluminum | | | | |
| Contaminants: | Oil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Phase III Inc | California Parts Washer Solution | 5 | 96.36 | <input checked="" type="checkbox"/> | |
| Valtech Corporation | Valtron SP 2275 | 5 | 93.04 | <input checked="" type="checkbox"/> | |

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|-------------------------------|---|---|-------|-------------------------------------|--|
| Buckeye International | Shopmaster LPH | 5 | 89.81 | <input checked="" type="checkbox"/> | |
| Warren Chemical Company | Sea Wash Blue | 5 | 98.38 | <input checked="" type="checkbox"/> | |
| Gemtek Products | SC Aircraft & Metal Cleaner Super Concentrate | 5 | 95.08 | <input checked="" type="checkbox"/> | |
| North Atlantic Bio Industries | NAB 9000 | 5 | 93.96 | <input checked="" type="checkbox"/> | |

Conclusion: All the products tested has passed the contaminant removal rate of 85% or better.