

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004
 DateRun: 02/23/2004
 Experimenters: Jason Marshall
 ClientType: Aircraft Parts Manufacturer
 ProjectNumber: Project #2
 Substrates: Aluminum
 PartType: Coupon
 Contaminants: Cutting/Tapping Fluids, Oil
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric
 Purpose: To evaluate successful cleaners on second supplied contaminant

Experimental Procedure: Five cleaners were selected from previous trial. Four aqueous based cleaners were diluted to 10% using DI water in 600 ml beakers. One semi-aqueous product was used at 50% diluted with DI water. All of the products were heated to 120 F on a hot plate. Fifteen preweighed aluminum coupons were coated with the second client supplied oil, Castrol Moly Dee Tapping Fluid. The oil was applied to coupons using a swab and then heated for 10 minutes using a Master Appliance heat gun. The coupons were allowed to cool to room temperature before weighing a second time. Three coupons were cleaned in each solution for 5 minutes using stir-bar agitation. Coupons were rinsed in tap water at 120 F for 15 seconds and then were dried using air blow off at room temperature. Once dry, coupons were weighed a final time and efficiencies for each cleaner were calculated.

Results: Three of the five products removed over 80% of the tapping fluid within five minutes. The Bio T 300 B removed nearly 100% of the soil. The current cleaner removed 76%. The table lists the amount of soil added, the amount remaining after cleaning and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|-----------------------------|------------|----------|-----------|
| 815 GD | 0.5010 | 0.1742 | 65.23 |
| | 0.3405 | 0.1057 | 68.96 |
| | 0.5977 | 0.0366 | 93.88 |
| SC Aircraft & Metal Cleaner | 0.4451 | 0.2141 | 51.90 |
| | 0.4596 | 0.2159 | 53.02 |
| | 0.4988 | 0.1558 | 68.77 |
| Metalnox M6314 | 0.6176 | 0.1369 | 77.83 |
| | 0.7053 | 0.0609 | 91.37 |
| | 0.6044 | 0.1048 | 82.66 |
| Hurrisafe 9450 | 0.6122 | 0.0574 | 90.62 |
| | 0.7026 | 0.0490 | 93.03 |
| | 0.5148 | 0.0972 | 81.12 |
| Bio T 300 B | 0.9124 | 0.0010 | 99.89 |
| | 0.7337 | 0.0023 | 99.69 |
| | 0.6849 | 0.0009 | 99.87 |

Summary:

| Substrates: | | Aluminum | | | |
|----------------------|---|-----------------------------|-------------|-------------------------------------|---------------|
| Contaminants: | | Cutting/Tapping Fluids, Oil | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Brulin Corporation | Formula 815 GD | 10 | 76.02 | <input type="checkbox"/> | |
| Gemtek Products | SC Aircraft & Metal Cleaner Super Concentrate | 10 | 57.90 | <input type="checkbox"/> | |
| Kyzen Corporation | Metalnox M6314 (For Comparison Only) | 10 | 83.95 | <input checked="" type="checkbox"/> | |
| PCI of America | Hurrisafe 9450 | 10 | 88.26 | <input checked="" type="checkbox"/> | |
| Bio Chem Systems | Bio T 300 B | 50 | 99.82 | <input checked="" type="checkbox"/> | |

Conclusion:

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Increasing the cleaning time should improve the effectiveness of the products. A follow up trial will be conducted at a longer time but will not use a rinse.