

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004
 DateRun: 11/12/2004
 Experimenters: Jason Marshall
 ClientType: Manufacturers of Precision Parts and Assemblies
 ProjectNumber: Project #1
 Substrates: Aluminum
 PartType: Coupon
 Contaminants: Lubricating/Lapping Oils
 Cleaning Methods: Low Pressure Spray
 Analytical Methods: Gravimetric
 Purpose: To reevaluate alternative cleaners under modified conditions

Experimental Procedure: The four alternative contact cleaners were used at full strength at room temperature. Two of the four products were supplied to the lab in spray cans. Two products had to be applied using a manual spray pump. (The Ak225 does come in a spray can but was not available at the time of testing).

Twelve of the previously cleaned 6061 aluminum coupons were contaminated with Fuch's Lubricants Renocut 6515 NC (mineral oil, vegetable oil). Three coupons were sprayed with each contact cleaner for an additional 30 seconds and allowed to air dry. The coupons sprayed with the Gemtek product were briefly sprayed with compressed air. Final clean weights were recorded and efficiencies were calculated.

Results: All four of the products improved with the added cleaning time, removing over 97% of the lubricant. The Gemtek product had the greatest improvement with the added air blow off, increasing from 67% to 97%. The table below lists the initial amount of soil added, the final amount remaining after the second cleaning and the resulting efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|------------------------------------|------------|----------|-----------|
| Heavy Duty Degreaser C | 0.2651 | 0.0034 | 98.72 |
| | 0.2505 | 0.0012 | 99.52 |
| | 0.1663 | 0.0025 | 98.50 |
| Flux Remover C | 0.3089 | 0.0034 | 98.90 |
| | 0.1857 | 0.0012 | 99.35 |
| | 0.3141 | 0.0015 | 99.52 |
| SC Evaporative Electronics Cleaner | 0.2403 | 0.0096 | 96.00 |
| | 0.3344 | 0.0050 | 98.50 |
| | 0.2086 | 0.0070 | 96.64 |
| AK 225 | 0.3502 | 0.0035 | 99.00 |
| | 0.3829 | 0.0063 | 98.35 |
| | 0.2876 | 0.0054 | 98.12 |

Summary:

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|----------------------|------------------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Aluminum | | | | |
| Contaminants: | Lubricating/Lapping Oils | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Micro Care | Heavy Duty Degreaser C | 100 | 98.91 | <input checked="" type="checkbox"/> | |
| Micro Care | Flux Remover C | 100 | 99.26 | <input checked="" type="checkbox"/> | |
| Gemtek Products | SC Evaporative Electronics Cleaner | 100 | 97.05 | <input checked="" type="checkbox"/> | |
| AGA Chemical | AK 225 | 100 | 98.49 | <input checked="" type="checkbox"/> | |

Conclusion: The alternative contact cleaners and the aqueous products will be evaluated on the supplied parts.