

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2006
DateRun: 08/15/2006
Experimenters: Jason Marshall
ClientType: Metal Working
ProjectNumber: Project #1
Substrates: Stainless Steel
PartType: Coupon
Contaminants: Cutting/Tapping Fluids, Oil
Cleaning Methods: Immersion/Soak
Analytical Methods: Gravimetric
Purpose: To evaluate products on second supplied oil.

Experimental Procedure: Four products from the previous trial were used based on their performance. An additional four alternative products were selected from the lab's database of testing results based on supplied client information. Products were chosen based on oil removal potential and compatibility with various metal substrates. Each product was diluted to 5% in 600 ml beakers using DI water and heated to 130 F on a hot plate.

Twenty-four preweighed coupons were coated with US Oil Company US Cut 6040 using a handheld swab. Coupons were weighed a second time to determine the amount of oil added. Three coupons were cleaned in each solution for five minutes using minimal stir bar agitation. Coupons were rinsed for 15 seconds in a tap water bath at 120 F and dried using a Master Appliance Heat gun at 500 F for 30 seconds. Once dry coupons were weighed a final time and product efficiencies were calculated.

Results: Four of the eight products removed over 80% of the oil within five minutes of immersion cleaning. Three of these four also were effective on the first supplied oil. The follow table lists the amount of oil added, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|----------------------|------------|----------|-----------|
| Surface Cleanse 930 | 0.2948 | 0.0314 | 89.35 |
| | 0.2383 | 0.0294 | 87.66 |
| | 0.2433 | 0.0395 | 83.76 |
| Aquavantage 1400 | 0.2269 | 0.0824 | 63.68 |
| | 0.2477 | 0.0880 | 64.47 |
| | 0.2727 | 0.1127 | 58.67 |
| Inproclean 3800 | 0.3294 | 0.0714 | 78.32 |
| | 0.2216 | 0.0465 | 79.02 |
| | 0.2894 | 0.0501 | 82.69 |
| Sea Wash Blue | 0.2403 | 0.0006 | 99.75 |
| | 0.2367 | 0.0003 | 99.87 |
| | 0.3524 | 0.0016 | 99.55 |
| Shopmaster | 0.1822 | 0.0707 | 61.20 |
| | 0.2009 | 0.0762 | 62.07 |
| | 0.2320 | 0.0617 | 73.41 |
| Polyspray Jet 790 XS | 0.2417 | 0.0823 | 65.95 |
| | 0.2564 | 0.0573 | 77.65 |
| | 0.2340 | 0.0577 | 75.34 |
| Amberclean 527 L | 0.2851 | 0.0694 | 75.66 |
| | 0.2078 | 0.0410 | 80.27 |
| | 0.1664 | 0.0565 | 66.05 |
| Mirachem 500 | 0.1909 | 0.0208 | 89.10 |
| | 0.1698 | 0.0159 | 90.64 |
| | 0.0759 | 0.0031 | 95.92 |

Summary: **Substrates:** Stainless Steel

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|------------------------------------|--|-----------------------------|--------------------|-------------------------------------|----------------------|
| Contaminants: | | Cutting/Tapping Fluids, Oil | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| International Products Corporation | Surface Cleanse Concentrated Neutral 930 | 5 | 86.93 | <input checked="" type="checkbox"/> | |
| Brulin Corporation | Aquavantage 1400 | 5 | 62.28 | <input type="checkbox"/> | |
| Oakite Products | Inproclean 3800 | 5 | 80.01 | <input checked="" type="checkbox"/> | |
| Warren Chemical Company | Sea Wash Blue | 5 | 99.72 | <input checked="" type="checkbox"/> | |
| Buckeye International | Shopmaster | 5 | 65.56 | <input type="checkbox"/> | |
| US Polychem Corporation | Polyspray Jet 790 XS | 5 | 72.98 | <input type="checkbox"/> | |
| Innovative Organics Inc | Amberclean 527 L | 5 | 73.99 | <input type="checkbox"/> | |
| Mirachem Corporation | Mirachem 500 | 5 | 91.89 | <input checked="" type="checkbox"/> | |

Conclusion: The four successful products will be used on the next supplied soil. In addition, the one product that was not evaluated on the first soil will be tested.