

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008
 DateRun: 06/17/2008
 Experimenters: Jason Marshall, Shweta Bansal
 ClientType: Tool Manufacturer
 ProjectNumber: Project #1
 Substrates: Steel
 PartType: Coupon
 Contaminants: Cutting/Tapping Fluids
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric

Purpose: To evaluate selected products on first supplied soil using immersion cleaning

Experimental Procedure: Ten products were selected from the lab's on-line database, www.cleanersolutions.org, based on supplied information from client. Each product was diluted to 5% using DI water in 600 ml glass beakers. Solutions were heated to 130 F on a hot plate. Thirty preweighed steel coupons were coated with the Castrol Industrial Inc Safety Draw 722X (61788-76-9, 64742-54-7) using a swab. Coupons were weighed a second time to determine the amount of soil added. Three coupons were immersed into each product and cleaned for 5 minutes using minimal stir-bar agitation. Following cleaning, coupons were rinsed for 15 seconds in tap water at 120 F and dried using air blow off for 30 seconds at room temperature. Final weights were recorded, and efficiencies were calculated.

Results: No product was very successful using immersion cleaning to remove the Safety Draw fluid. Three of the products had marginal success, removing over a third of the soil in time frame. The table lists the amount of soil added to the coupons, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|----------------------|------------|----------|-----------|
| Shopmaster LpH | 1.2137 | 1.0225 | 15.75 |
| | 1.1135 | 0.9075 | 18.50 |
| | 0.1178 | 0.1293 | -9.76 |
| SC Aircraft | 0.5663 | 0.5225 | 7.73 |
| | 0.7015 | 0.4883 | 30.39 |
| | 0.7447 | 0.4684 | 37.10 |
| Inproclean 3800 | 0.6469 | 0.5230 | 19.15 |
| | 0.3120 | 0.2797 | 10.35 |
| | 0.6061 | 0.5558 | 8.30 |
| Micro 90 | 0.5373 | 0.3236 | 39.77 |
| | 0.5647 | 0.4179 | 26.00 |
| | 0.6406 | 0.4256 | 33.56 |
| Sea Wash Blue | 0.4791 | 0.3807 | 20.54 |
| | 0.3889 | 0.3638 | 6.45 |
| | 0.5080 | 0.4953 | 2.50 |
| Daraclean 282 GF | 0.3931 | 0.3337 | 15.11 |
| | 0.4629 | 0.2623 | 43.34 |
| | 0.2841 | 0.1559 | 45.12 |
| Aquavantage 1400 GD | 0.5472 | 0.5084 | 7.09 |
| | 0.6346 | 0.5415 | 14.67 |
| | 0.4646 | 0.3489 | 24.90 |
| Polyspray Jet 790 XS | 0.4099 | 0.2508 | 38.81 |
| | 0.6895 | 0.2037 | 70.46 |
| | 0.7768 | 0.5275 | 32.09 |
| BG Solv 717 | 0.4779 | 0.3699 | 22.60 |
| | 0.7915 | 0.6276 | 20.71 |
| | 0.5449 | 0.3647 | 33.07 |
| Hurrisafe | 0.6333 | 0.4602 | 27.33 |

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| | 0.6192 | 0.5813 | 6.12 |
| | 0.6824 | 0.5654 | 17.15 |

Summary:

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|------------------------------------|---|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Steel | | | | |
| Contaminants: | Cutting/Tapping Fluids | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Buckeye International | Shopmaster LPH | 5 | 8.16 | <input type="checkbox"/> | |
| Gemtek Products | SC Aircraft & Metal Cleaner Super Concentrate | 5 | 25.08 | <input type="checkbox"/> | |
| Oakite Products | Inproclean 3800 | 5 | 12.60 | <input type="checkbox"/> | |
| International Products Corporation | Micro 90 Conc. | 5 | 33.11 | <input checked="" type="checkbox"/> | |
| Warren Chemical Company | Sea Wash Blue | 5 | 9.83 | <input type="checkbox"/> | |
| Magnaflux | Daraclean 282 GF | 5 | 34.52 | <input checked="" type="checkbox"/> | |
| Brulin Corporation | Aquavantage 1400 | 5 | 15.55 | <input type="checkbox"/> | |
| US Polychem Corporation | Polyspray Jet 790 XS | 5 | 47.12 | <input checked="" type="checkbox"/> | |
| BioGenesis Enterprises Inc | BG Solv 717 Ink & Graffiti Cleaner | 5 | 25.46 | <input type="checkbox"/> | |
| PCI of America | Hurrisafe 9450 | 5 | 16.87 | <input type="checkbox"/> | |

Conclusion:

The three products that were partially successful will be evaluated using ultrasonic cleaning. Additional products will be selected from the lab's inventory as well.