

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008

DateRun: 08/07/2008

Experimenters: Heidi Wilcox, Shweta Bansal

ClientType: Machining Company

ProjectNumber: Project #1

Substrates: Steel

PartType: Coupon

Contaminants: Cutting/Tapping Fluids

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To evaluate aqueous alternatives on grinding fluid using ultrasonic energy

Experimental Procedure: Six products from previous trials were selected for testing. Five of the products were diluted to 20% and the sixth product was diluted to 5%. Products were heated to 130 F and immersed in a Branson 40 kHz ultrasonic tank and degassed for at least five minutes. Eighteen preweighed coupons were coated with the supplied grinding fluid using a handheld swab and weighed a second time to determine the amount of soil added. Three coupons were cleaned with ultrasonic energy for five minutes, rinsed in tap water for 15 seconds at 120 F and dried using compressed air at room temperature for 30 seconds. Final weights were recorded, and efficiencies calculated for each coupon cleaned.

Results: Five of the six products removed more than 90% of the rust preventative. One removed less than 80%. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|-----------------------------|------------|----------|-----------|
| Shopmaster LpH | 0.1251 | 0.0054 | 95.68 |
| | 0.1004 | -0.0085 | 108.47 |
| | 0.2205 | 0.0072 | 96.73 |
| Aquavantage 1400 GD | 0.1423 | -0.0001 | 100.07 |
| | 0.1767 | -0.0071 | 104.02 |
| | 0.1971 | 0.0184 | 90.66 |
| Shopmaster HP | 0.1832 | 0.0495 | 72.98 |
| | 0.1579 | 0.0596 | 62.25 |
| | 0.2018 | 0.0326 | 83.85 |
| Inproclean 3800 | 0.1923 | -0.0012 | 100.62 |
| | 0.1747 | 0.0282 | 83.86 |
| | 0.1377 | 0.0137 | 90.05 |
| Bio T 300 B | 0.1761 | 0.0195 | 88.93 |
| | 0.1657 | -0.0034 | 102.05 |
| | 0.1809 | 0.0104 | 94.25 |
| SC Aircraft & Metal Cleaner | 0.1508 | 0.0078 | 94.83 |
| | 0.2408 | -0.0020 | 100.83 |
| | 0.1175 | 0.0056 | 95.23 |

Summary:

| Substrates: | Steel | | | | |
|-----------------------|------------------------|--------|-------------|-------------------------------------|---------------|
| Contaminants: | Cutting/Tapping Fluids | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Buckeye International | Shopmaster LPH | 20 | 100.29 | <input checked="" type="checkbox"/> | |
| Brulin Corporation | Aquavantage 1400 | 20 | 98.25 | <input checked="" type="checkbox"/> | |
| Buckeye International | Shopmaster HP | 20 | 73.03 | <input type="checkbox"/> | |
| Oakite Products | Inproclean 3800 | 20 | 91.57 | <input checked="" type="checkbox"/> | |
| Bio Chem Systems | Bio T 300 B | 5 | 95.08 | <input checked="" type="checkbox"/> | |

Conclusion:

CLEANING LABORATORY EVALUATION SUMMARY

The top five products from this trial will be evaluated next on the supplied lubricant.