

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008

DateRun: 08/08/2008

Experimenters: Heidi Wilcox, Shweta Bansal

ClientType: Machining Company

ProjectNumber: Project #1

Substrates: Steel

PartType: Coupon

Contaminants: Lubricating/Lapping Oils

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To evaluate aqueous alternatives on supplied lubricant using ultrasonic cleaning.

Experimental Procedure: Five products from previous trials were selected for testing. Four of the products were diluted to 20% and the fifth 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. Fifteen preweighed coupons were coated with the supplied Extreme Pressure Lube #3 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: Two of the six products removed more than 80% of the rust preventative. Three removed less than 75%. 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              | 0.4876     | 0.1652   | 66.12     |
|                             | 0.4722     | 0.1540   | 67.39     |
|                             | 0.5005     | 0.0569   | 88.63     |
| Aquavantage 1400 GD         | 0.3284     | 0.0212   | 93.54     |
|                             | 0.4346     | 0.0167   | 96.16     |
|                             | 0.4727     | 0.1955   | 58.64     |
| Inproclean 3800             | 0.4658     | 0.1424   | 69.43     |
|                             | 0.4484     | 0.1422   | 68.29     |
|                             | 0.5797     | 0.2482   | 57.18     |
| Bio T 300 B                 | 0.3805     | 0.0285   | 92.51     |
|                             | 0.4506     | 0.0475   | 89.46     |
|                             | 0.5586     | 0.0467   | 91.64     |
| SC Aircraft & Metal Cleaner | 0.5761     | 0.1339   | 76.76     |
|                             | 0.5621     | 0.0688   | 87.76     |
|                             | 0.6420     | 0.3889   | 39.42     |

Summary:

|                       |   |               |                    |                                     |                      |
|-----------------------|---|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>    | Steel   |               |                    |                                     |                      |
| <b>Contaminants:</b>  | Lubricating/Lapping Oils                      |               |                    |                                     |                      |
| <b>Company Name:</b>  | <b>Product Name:</b>                          | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| Buckeye International | Shopmaster LPH                                | 20            | 74.05              | <input type="checkbox"/>            |                      |
| Brulin Corporation    | Aquavantage 1400                              | 20            | 82.78              | <input checked="" type="checkbox"/> |                      |
| Oakite Products       | Inproclean 3800                               | 20            | 64.97              | <input type="checkbox"/>            |                      |
| Bio Chem Systems      | Bio T 300 B                                   | 5             | 91.20              | <input checked="" type="checkbox"/> |                      |
| Gemtek Products       | SC Aircraft & Metal Cleaner Super Concentrate | 20            | 67.98              | <input type="checkbox"/>            |                      |

Conclusion: Two products were found to be effective on all four contaminants when used with ultrasonic energy.