

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2000
 DateRun: 02/01/2000
 Experimenters: Jason Marshall
 ClientType: Mfr Boating Accessories
 ProjectNumber: Project #2
 Substrates: Brass
 PartType: Coupon
 Contaminants: Lubricating/Lapping Oils
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric

Purpose: To reevaluate selected cleaners under heated conditions.

Experimental Procedure: Eight cleaners were selected from the previous trial. The same six solutions were diluted with DI water to five percent by volume in a 600 ml beaker. The other two products were diluted to 10% as suggested by the vendor. All eight solutions were heated to 130 F on a hot plate. Twenty-four preweighed coupons were coated with the supplied oil and weighed again. Three coupons were cleaned in a solution for five minutes at room temperature using stir-bar agitation. After cleaning the coupons were rinsed for 15 second in tap water at 120 F and allowed to air dry for two hours. Following the drying, final clean weights were recorded and efficiencies were calculated.

SUBSTRATE MATERIAL: Brass Coupons

CONTAMINANTS: Oil-Texaco Lubricant Company Cleartex D (CAS#: 64742-65-0, 68527-02-6)

CONTAMINATING PROCESS USED: Coupons were coated with oil using a hand held swab.

Results: Heating the solutions improved the cleaning efficiencies for all eight cleaning solutions. Chrisal, SWR Corp, Oakite and Envirosolutions each removed over 90% of the contaminant from the coupons. Table 2 lists the calculated efficiencies for each trial and compares them to the results form Trial 2.

Table 2. Heated Cleaning

| Cleaner | Alconox | Chrisal | Savogran | SWR Corp | Valtech | C&D | Oakite | Envirosolutions |
|----------|---------|---------|----------|----------|---------|-------|--------|-----------------|
| Coupon 1 | 60.87 | 97.78 | 61.66 | 97.04 | 76.92 | 79.64 | 96.93 | 83.62 |
| Coupon 2 | 66.03 | 98.72 | 63.27 | 97.26 | 94.19 | 76.02 | 97.71 | 96.48 |
| Coupon 3 | 47.72 | 98.36 | 64.56 | 99.01 | 83.89 | 82.81 | 96.85 | 97.81 |
| Average | 58.21 | 98.29 | 63.17 | 97.77 | 85.00 | 79.49 | 97.16 | 92.64 |
| Trial 2 | 52.02 | 82.90 | 47.94 | 71.25 | 66.55 | 54.25 | 78.41 | 67.70 |

Summary:

| Substrates: | | Brass | | | | |
|-------------------------|-------------------------|--------------------------|-------------|-------------------------------------|---------------|--|
| Contaminants: | | Lubricating/Lapping Oils | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: | |
| Alconox Inc | Luminox | 5 | 58.21 | <input type="checkbox"/> | | |
| Chrisal USA Inc | Super CMF 240 | 5 | 98.29 | <input checked="" type="checkbox"/> | | |
| Savogran Company | Dirtex Prepaint Cleaner | 5 | 63.17 | <input type="checkbox"/> | | |
| SWR Corporation | SWR One | 5 | 97.77 | <input checked="" type="checkbox"/> | | |
| Valtech Corporation | Valtron SP 2250 2LF | 5 | 85.00 | <input checked="" type="checkbox"/> | | |
| Church & Dwight Co Inc. | Armakleen E 2002 | 5 | 79.49 | <input type="checkbox"/> | | |
| Oakite Products | Inproclean 4000 T | 10 | 97.16 | <input checked="" type="checkbox"/> | | |
| Bio Chem Systems | Bio T Max | 10 | 92.64 | <input checked="" type="checkbox"/> | | |

Conclusion: Heating the solutions improve the removal of the oil from the brass coupons. The solutions with efficiencies over 70% will be evaluated next for removing the rosin solder flux.