

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2006
 DateRun: 08/17/2006
 Experimenters: Jason Marshall
 ClientType: Metal Working
 ProjectNumber: Project #1
 Substrates: Brass
 PartType: Coupon
 Contaminants: Buffing/Polishing Compounds
 Cleaning Methods: Ultrasonics
 Analytical Methods: Gravimetric

Purpose: To evaluate previously tested products using ultrasonic energy.

Experimental Procedure: Four products from the previous trial were diluted to 5% in 250 ml beakers using DI water and heated to 130 F in a Brason 3510 ultrasonic tank and degassed for 5 minutes.

Twelve preweighed coupons were coated with the green buffing compound using a hand held swab after heating to its melting point with a heat gun. Coupons were weighed a second time to determine the amount of buffing compound added. Three coupons were cleaned in each solution for five minutes using 40 kHz ultrasonic agitation. Coupons were rinsed for 15 seconds in a tap water bath at 120 F and dried using a dry compressed air for 30 seconds. Once dry coupons were weighed a final time and product efficiencies were calculated.

Results: Ultrasonic cleaning improved the efficiency for two of the four products tested. Both Daraclean 283 and Polyspray Jet 790 XS removed 70 and 86% of the buffing compound after five minutes of ultrasonic cleaning. The following table lists the amount of buffing compound applied, the amount remaining and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|----------------------|------------|----------|-----------|
| Daraclean 283 | 0.2243 | 0.0117 | 94.78 |
| | 0.3470 | 0.1031 | 70.29 |
| | 0.5817 | 0.3084 | 46.98 |
| Inproclean 3800 | 0.5119 | 0.3280 | 35.92 |
| | 0.1132 | 0.0004 | 99.65 |
| | 0.6942 | 0.3628 | 47.74 |
| Beyond 2001 | 0.4965 | 0.1676 | 66.24 |
| | 0.5220 | 0.2934 | 43.79 |
| | 0.4332 | 0.1706 | 60.62 |
| Polyspray Jet 790 XS | 0.1408 | 0.0040 | 97.16 |
| | 0.3748 | 0.0503 | 86.58 |
| | 0.8823 | 0.2177 | 75.33 |

Summary:

| Substrates: | | Brass | | | |
|-------------------------|----------------------|-----------------------------|-------------|-------------------------------------|---------------|
| Contaminants: | | Buffing/Polishing Compounds | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Magnaflux | Daraclean 283 | 5 | 70.68 | <input checked="" type="checkbox"/> | |
| Oakite Products | Inproclean 3800 | 5 | 61.10 | <input type="checkbox"/> | |
| Today & Beyond | Beyond 2001 | 5 | 56.89 | <input type="checkbox"/> | |
| US Polychem Corporation | Polyspray Jet 790 XS | 5 | 86.35 | <input checked="" type="checkbox"/> | |

Conclusion: Longer cleaning times or increased temperature should improve cleaning efficiency for the top two cleaners. These cleaners will be used on the next supplied buffing compound.