

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2010
 DateRun: 07/13/2010
 Experimenters: Heidi Wilcox, Timothy Weil
 ClientType: Metal Working
 ProjectNumber: Project #1
 Substrates: Brass
 PartType: Coupon
 Contaminants: Buffing/Polishing Compounds
 Cleaning Methods: Ultrasonics
 Analytical Methods: Gravimetric
 Purpose: To determine then difference in effectiveness of eight different cleaners using the predefined cleaning method.

Experimental Procedure: Twenty-four brass coupons were cleaned, dried and weighed. The 24 coupons were then coated with Formax Manufacturing Corporation Blue Moon Chrome Rouge buffing compound (CAS 1344-28-1), allowed to dry and then weighed again. The coupons were separated into eight groups of three, one for each cleaning solution.

Eight products were selected from previous trial based on effectiveness. All products were diluted to 5% using DI water in 500 ml beakers. Each solution was heated to 120° on a Thermolyne heat plate (Type 2200). The solutions were then agitated using ultrasonic for 5 minutes at 120° F in a Branson 2510 ultrasonic cleaner (Model 2510-DTHa) tank filled with water.

Three Brass Coupons coated with a client provided buffing compound were cleaned in each solution for five minutes intervals using ultrasonic cleaning. Coupons were rinsed for 30 seconds in tap water at room temperature and dried using heated air.

Results: All eight products worked in under five minutes of cleaning. The table below lists the amount of buffing compound added, the amount remaining after cleaning and the efficiency for each coupon cleaned.

| Cleaner | Initial wt | Final wt | % Removed |
|------------------|------------|----------|-----------|
| Daraclean 283 | | | |
| | 0.4105 | -0.0039 | 100.95 |
| | 0.1663 | -0.0041 | 102.47 |
| | 0.1608 | -0.0042 | 102.61 |
| Polyspray 790 XS | | | |
| | 0.2385 | 0.0044 | 98.16 |
| | 0.1582 | -0.0050 | 103.16 |
| | 0.2603 | 0.0062 | 97.62 |
| Detergent 8 | | | |
| | 0.3163 | -0.0013 | 100.41 |
| | 0.6033 | -0.0032 | 100.53 |
| | 0.3903 | -0.0019 | 100.49 |
| Buffclean 125 L | | | |
| | 0.3222 | -0.0084 | 102.61 |
| | 0.4996 | -0.0081 | 101.62 |
| | 0.4259 | -0.0043 | 101.01 |
| Micro 90 | | | |
| | 0.5170 | 0.0024 | 99.54 |
| | 0.4307 | 0.0188 | 95.64 |
| | 0.2590 | -0.0026 | 101 |
| Shopmaster HP | | | |
| | 0.4155 | 0.1458 | 64.91 |
| | 0.5844 | -0.0031 | 100.53 |
| | 0.2237 | 0.0035 | 98.44 |
| Inproclean 3800 | | | |
| | 0.4271 | 0.0125 | 97.07 |
| | 0.3031 | 0.0001 | 99.97 |
| | 0.5504 | 0.0155 | 97.18 |

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|----------------|--------|---------|--------|
| Buffclean 14 L | | | |
| | 0.3220 | 0.0178 | 94.47 |
| | 0.2979 | -0.0036 | 101.21 |
| | 0.3875 | -0.0013 | 100.34 |

Summary:

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|------------------------------------|-----------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Brass | | | | |
| Contaminants: | Buffing/Polishing Compounds | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Magnaflux | Daraclean 283 | 5 | 102.01 | <input checked="" type="checkbox"/> | |
| US Polychem Corporation | Polyspray Jet 790 XS | 5 | 99.64 | <input checked="" type="checkbox"/> | |
| Alconox Inc | Detergent 8 | 5 | 100.48 | <input checked="" type="checkbox"/> | |
| Matchless Metal Polish Company | Buffclean 125 L | 5 | 101.75 | <input checked="" type="checkbox"/> | |
| International Products Corporation | Micro 90 Conc. | 5 | 98.72 | <input checked="" type="checkbox"/> | |
| Buckeye International | Shopmaster HP | 5 | 87.96 | <input checked="" type="checkbox"/> | |
| Oakite Products | Inproclean 3800 | 5 | 98.07 | <input checked="" type="checkbox"/> | |
| Matchless Metal Polish Company | Buffclean 14L | 5 | 98.67 | <input checked="" type="checkbox"/> | |

Conclusion:

All solutions were successful in removing the buffing compound.