

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2005  
 DateRun: 09/21/2005  
 Experimenters: Jason Marshall  
 ClientType: Metal Finishing  
 ProjectNumber: Project #1  
 Substrates: Brass  
 PartType: Coupon  
 Contaminants: Buffing/Polishing Compounds  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Gravimetric  
 Purpose: To evaluate effective aqueous products on third buffing compound.

Experimental Procedure: Three products were selected from the lab's previous test results based on performance. Each product was used at 5% diluted with DI water and heated to 130 F on a hot plate. A 600 ml beaker was filled with each product and placed on a stir plate.

Nine preweighed 260 Brass coupons were coated with the Buffing - Jacksonlea ET-31A (1317-95-9) buffing compound. The compound was applied by heating the coupons and the buffing compound with a Master Appliance Heat Gun. The hot buffing compound was rubbed across the surface. Coupons were allowed to cool to room temperature and weighed a second time to determine the amount of contaminant applied. Three coupons were cleaned in each product for 5 minutes using stir-bar agitation. After cleaning, the parts were rinsed for 15 seconds in 120 F tap water bath and then dried for 30 seconds using dry, compressed air at room temperature. Once dry, final weights were recorded and efficiencies were calculated for each product.

Results: One product removed over 90% of the third buffing compound. The other two only removed around half of the contaminant. The lower efficiencies were recorded on coupons that had large clumps of the buffing compound. When the buffing compounds were applied in a thin layer, efficiencies were much higher.

| Cleaner          | Initial wt | Final wt | % Removed |
|------------------|------------|----------|-----------|
| Fomula 815 GD    | 0.1602     | 0.0711   | 55.62     |
|                  | 0.2267     | 0.1133   | 50.02     |
|                  | 0.0615     | 0.0221   | 64.07     |
| MC 132           | 0.1551     | 0.0096   | 93.81     |
|                  | 0.1240     | 0.0287   | 76.85     |
|                  | 0.1432     | 0.0006   | 99.58     |
| Texolite 1740 XL | 0.1643     | 0.1188   | 27.69     |
|                  | 0.1172     | 0.0647   | 44.80     |
|                  | 0.0271     | 0.0041   | 84.87     |

The drop-in solvents worked better than the aqueous cleaners. The table below lists the efficiencies for the drop-in solvents from the previous tests.

| Product   | Efficiency |
|-----------|------------|
| Ensolv    | 94.66      |
| CCA       | 91.74      |
| MCA       | 81.60      |
| Lenium ES | 98.33      |
| Solvon IP | 79.47      |
| Solvon PB | 71.18      |

Summary:

|                                |                             |               |                    |                                     |                      |
|--------------------------------|-----------------------------|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>             | Brass                       |               |                    |                                     |                      |
| <b>Contaminants:</b>           | Buffing/Polishing Compounds |               |                    |                                     |                      |
| <b>Company Name:</b>           | <b>Product Name:</b>        | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| Brulin Corporation             | Formula 815 GD              | 5             | 56.57              | <input type="checkbox"/>            |                      |
| Matchless Metal Polish Company | MC 132                      | 5             | 90.08              | <input checked="" type="checkbox"/> |                      |
| Texo Corporation               | Texolite 1734 XL            | 5             | 52.45              | <input type="checkbox"/>            |                      |

Conclusion:

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The next step of testing will be to evaluate the aqueous products using ultrasonic energy and to compare results to current aqueous cleaning product. Additional testing would be to clean client supplied parts.