

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002
 DateRun: 08/01/2002
 Experimenters: Jason Marshall
 ClientType: Metal
 ProjectNumber: Project #1
 Substrates: Alloys, Copper
 PartType: Coupon
 Contaminants: Buffing/Polishing Compounds, Greases
 Cleaning Methods: Immersion/Soak
 Analytical Methods: Gravimetric
 Purpose: To identify and compare alternatives to current cleaning solution

Experimental Procedure: Nine alkaline aqueous products were selected from the laboratories database of effective cleaners. Selections were made based on successful cleaning of buffing compounds and compatibility with brass and copper. An additional solution was supplied by the client. Each solution was diluted to 5% using DI water in 600 ml beakers. The dilutions were heated to 130 F on a hot plate. Thirty preweighed coupons were coated with Jackson Lea Learok 7-S-3 Buffing compound (102-71-6, 14808-60-7, 1317-95-9). The buffing compound was applied by first heating it with a hot air gun and rubbing the coupons with the melted contaminant. Coupons were allowed to cool to room temperature and then weighed again. Three coupons were cleaned in each solution for 5 minutes using stir-bar agitation. Following the cleaning, coupons were rinsed with a DI water bath for 30 seconds at room temperature and dried using a Master Appliance Heat Gun at 300 F for 15 seconds. Coupons were again allowed to cool to room temperature and then weighed a final time. Cleaning efficiencies were calculated and recorded.

Results: During the initial soak cleaning, many of the produces were dissolving the buffing compound. Despite this observation, when the coupons were weighed, efficiencies were very low. It was noted that the buffing compound was only loosely attached the coupons. When the coupons were wiped with a single pass using a paper towel, efficiencies were vastly improved. The following table lists the efficiencies calculated for both the initial immersion test and the wipe analysis.

| Cleaner | Immersion | with Wipe |
|---------------------|-----------|-----------|
| Permag S-4 | 3.70 | 96.61 |
| 815 GD | -4.82 | 76.17 |
| Shopmaster LpH | 6.15 | 10.66 |
| Micro 90 | -3.37 | 99.43 |
| ND 17 | 18.26 | 93.35 |
| Inproclean 3800 | 31.73 | 90.16 |
| Dirtex | 12.95 | 82.39 |
| Simple GreenD | 3.76 | 30.65 |
| Polychem Spray 790P | 28.09 | 74.30 |
| Daraclean 282 GF | 30.28 | 99.12 |

Summary:

| Substrates: | | Alloys, Copper | | | | |
|------------------------------------|--|--------------------------------------|--------|-------------|-------------------------------------|---------------|
| Contaminants: | | Buffing/Polishing Compounds, Greases | | | | |
| Company Name: | | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Buckeye International | | Shopmaster LPH | 5 | 10.66 | <input type="checkbox"/> | |
| Brulin Corporation | | Formula 815 GD | 5 | 76.17 | <input checked="" type="checkbox"/> | |
| International Products Corporation | | Micro 90 Conc. | 5 | 99.43 | <input checked="" type="checkbox"/> | |
| Simple Green | | Simple Green D | 5 | 30.65 | <input type="checkbox"/> | |
| Savogran Company | | Dirtex Prepaint Cleaner | 5 | 82.39 | <input checked="" type="checkbox"/> | |
| Magnaflux | | Daraclean 282 GF | 5 | 99.12 | <input checked="" type="checkbox"/> | |
| US Polychem Corporation | | Polyspray Jet 790 P | 5 | 74.30 | <input checked="" type="checkbox"/> | |
| Oakite Products | | Inproclean 3800 | 5 | 90.16 | <input checked="" type="checkbox"/> | |
| MacDermid Industrial Products | | ND 17 | 5 | 93.35 | <input checked="" type="checkbox"/> | |
| Magnuson Products | | Permag S-4 | 5 | 96.61 | <input checked="" type="checkbox"/> | |

Conclusion:

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The eight successful wipe cleaners will be evaluated using ultrasonics.