# CLEANING LABORATORY EVALUATION SUMMARY

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|---|---|
| SCL #: | 2004 |
| DateRun: | 08/22/2004 |
| Experimenters: | Jason Marshall |
| ClientType: | Jewelry Mfr |
| ProjectNumber: | Project #1 |
| Substrates: | Brass |
| PartType: | Coupon |
| Contaminants: | Buffing/Polishing Compounds |
| Cleaning Methods: | Immersion/Soak |
| Analytical Methods: | Gravimetric |
| Purpose: | To evaluate drop in replacement solvents for TCE in removing buffing compound. |
| Experimental Procedure: | Sixteen products were selected from the laboratory's database of test results based on client specific information. Each product was used at full strength in 250 ml beakers at room temperature.<br>Forty-eight preweighed CDA260 Brass coupons were coated with the Matchless Metal Polishing Company K55-278 Liquid Tripoli Buffing compound (1317-85-8) using a hand held swab. Coupons were allowed to sit overnight and weighed a second time to determine the amount of soil added to each coupon. Three coupons were cleaned in each product for 5 minutes with no agitation. Coupons were air dried at room temperature. Once coupons were dry, final weights were recorded and efficiencies were calculated. |
| Results: | Four of the sixteen products removed over 75% of the buffing compound in the five minutes of room temperature soaking. Another four removed over 63% and three removed over 55% of the buffing compound. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned. |

| Cleaner | Initial wt | Final wt | % Removed |
|---|---|---|---|
| AK 225 | 0.6983 | 0.6266 | 10.27 |
| | 0.2376 | 0.1905 | 19.82 |
| | 0.3403 | 0.2727 | 19.86 |
| CCA | 0.2445 | 0.1164 | 52.39 |
| | 0.2430 | 0.1090 | 55.14 |
| | 0.2668 | 0.1052 | 60.57 |
| MCA | 0.3134 | 0.1474 | 52.97 |
| | 0.3613 | 0.1695 | 53.09 |
| | 0.2837 | 0.0826 | 70.88 |
| Heavy Duty C | 0.3338 | 0.1694 | 49.25 |
| | 0.2587 | 0.1341 | 48.16 |
| | 0.3803 | 0.2097 | 44.86 |
| Flux Remover C | 0.2879 | 0.0968 | 66.38 |
| | 0.4980 | 0.2324 | 53.33 |
| | 0.2381 | 0.0706 | 70.35 |
| HFE 7100 | 0.2726 | 0.2687 | 1.43 |
| | 0.3541 | 0.3350 | 5.39 |
| | 0.3045 | 0.2972 | 2.40 |
| HFE 71DE | 0.4460 | 0.2445 | 45.18 |
| | 0.3428 | 0.1255 | 63.39 |
| | 0.2119 | 0.0631 | 70.22 |
| HFE 7200 | 0.4060 | 0.3934 | 3.10 |
| | 0.5930 | 0.5733 | 3.32 |
| | 0.3123 | 0.3079 | 1.41 |
| Ensolv | 0.3454 | 0.0899 | 73.97 |
| | 0.2464 | 0.0545 | 77.88 |
| | 0.3096 | 0.0672 | 78.29 |
| Ensolv A | 0.4083 | 0.1541 | 62.26 |
| | 0.4395 | 0.1330 | 69.74 |
| | 0.4287 | 0.1461 | 65.92 |

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| Lenium CP | 0.1554 | 0.0954 | 38.61 |
| | 0.3560 | 0.2557 | 28.17 |
| | 0.2719 | 0.1328 | 51.16 |
| Lenium ES | 0.3629 | 0.0566 | 84.40 |
| | 0.2583 | 0.0308 | 88.08 |
| | 0.2802 | 0.0471 | 83.19 |
| Lenium GS | 0.2393 | 0.0342 | 85.71 |
| | 0.4664 | 0.1420 | 69.55 |
| | 0.4294 | 0.2016 | 53.05 |
| Metalnox M6960 | 0.3864 | 0.1070 | 72.31 |
| | 0.3407 | 0.0487 | 85.71 |
| | 0.3839 | 0.0616 | 83.95 |
| Solvon PB | 0.4200 | 0.1062 | 74.71 |
| | 0.2570 | 0.0648 | 74.79 |
| | 0.2187 | 0.0282 | 87.11 |
| Solvon IP | 0.3878 | 0.1355 | 65.06 |
| | 0.6035 | 0.2438 | 59.60 |
| | 0.4632 | 0.1589 | 65.70 |

Summary:

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| **Substrates:** | Brass |
| **Contaminants:** | Buffing/Polishing Compounds |

| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
|---|---|---|---|---|---|
| AGA Chemical | AK 225 | 100 | 16.65 | ☐ | |
| DuPont | Vertrel CCA | 100 | 56.04 | ☐ | |
| DuPont | Vertrel MCA | 100 | 58.98 | ☐ | |
| Chem Free Corporation | SW-2 Heavy Grease Formula | 100 | 47.42 | ☐ | |
| Micro Care | Flux Remover C | 100 | 63.35 | ☑ | |
| 3M | HFE 7100 | 100 | 3.07 | ☐ | |
| 3M | HFE 71DE | 100 | 59.60 | ☐ | |
| 3M | HFE 7200 | 100 | 2.61 | ☐ | |
| Enviro Tech International Inc | Ensolv | 100 | 76.72 | ☑ | |
| Enviro Tech International Inc | Ensolv A | 100 | 65.97 | ☑ | |
| Petroferm Inc | Lenium CP (no longer available) | 100 | 39.31 | ☐ | |
| Petroferm Inc | Lenium ES | 100 | 85.22 | ☑ | |
| Petroferm Inc | Lenium GS | 100 | 65.44 | ☑ | |
| Kyzen Corporation | Metalnox M6960 | 100 | 80.66 | ☑ | |
| Poly Systems USA Inc | Solvon Kreussler PB | 100 | 78.87 | ☑ | |
| Poly Systems USA Inc | Solvon Kreussler IP | 100 | 63.45 | ☑ | |

Conclusion: The eight products that removed over 60% of the contaminant will be used in the next trial using the second supplied contaminant.