

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004
DateRun: 05/28/2004
Experimenters: Jason Marshall
ClientType: Lab
ProjectNumber: Project #1
Substrates: Sterling/Silver
PartType: Coupon
Contaminants: Oil
Cleaning Methods: Vapor Degreasing
Analytical Methods: Gravimetric

Purpose: Laboratory evaluations of alternative cleaning products

Experimental Procedure: Basic cleaning performance testing was conducted using ASTM G122 as the bases for cleaning. Two hundred fifty milliliters of each product were used at full strength in a 4000 ml beaker and heated to its boiling point on a hot plate. Preweighed aluminum coupons were coated with the Houghton International Cindol 3401 oil (64742-46-7) using a handheld swab. Coupons were weighed a second time to determine the amount of soil added to each coupon. Three coupons were cleaned in each solution for 5 minutes using vapor degreasing. After cooling to room temperature, the coupons were weighed a final time and efficiencies were calculated.

Results:

Summary:

| Substrates: | | Sterling/Silver | | | | |
|-------------------------------|------------------------|-----------------|-------------|-------------------------------------|---------------|--|
| Contaminants: | | Oil | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: | |
| AGA Chemical | AK 225 | 100 | 99.14 | <input checked="" type="checkbox"/> | | |
| DuPont | Vertrel CCA | 100 | 99.68 | <input checked="" type="checkbox"/> | | |
| DuPont | Vertrel MCA | 100 | 100.01 | <input checked="" type="checkbox"/> | | |
| Micro Care | Heavy Duty Degreaser C | 100 | 100.37 | <input checked="" type="checkbox"/> | | |
| Micro Care | Flux Remover C | 100 | 100.55 | <input checked="" type="checkbox"/> | | |
| 3M | HFE 7100 | 100 | 99.96 | <input checked="" type="checkbox"/> | | |
| 3M | HFE 7200 | 100 | 98.92 | <input checked="" type="checkbox"/> | | |
| Enviro Tech International Inc | Ensolv | 100 | 99.71 | <input checked="" type="checkbox"/> | | |
| Enviro Tech International Inc | Ensolv A | 100 | 99.13 | <input checked="" type="checkbox"/> | | |
| Kyzen Corporation | Metalnox M6960 | 100 | 99.08 | <input checked="" type="checkbox"/> | | |
| Poly Systems USA Inc | Solvon Kreussler PB | 100 | 99.87 | <input checked="" type="checkbox"/> | | |
| Poly Systems USA Inc | Solvon Kreussler IP | 100 | 99.71 | <input checked="" type="checkbox"/> | | |
| Dow Chemical Company | OS 10 | 100 | 99.73 | <input checked="" type="checkbox"/> | | |
| Dow Chemical Company | OS 20 | 100 | 99.14 | <input checked="" type="checkbox"/> | | |
| Dow Chemical Company | OS 30 | 100 | 89.55 | <input checked="" type="checkbox"/> | | |

Conclusion: All fifteen products removed over 85%.