

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004  
DateRun: 05/28/2004  
Experimenters: Jason Marshall  
ClientType: Lab  
ProjectNumber: Project #1  
Substrates: Aluminum  
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 C.P. Hall Co. Plasthall ESO oil (8013-07-8) 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:

| <b>Substrates:</b>            |                        | Aluminum |             |                                     |               |  |
|-------------------------------|------------------------|----------|-------------|-------------------------------------|---------------|--|
| <b>Contaminants:</b>          |                        | Oil      |             |                                     |               |  |
| Company Name:                 | Product Name:          | Conc.:   | Efficiency: | Effective:                          | Observations: |  |
| AGA Chemical                  | AK 225                 | 100      | 99.72       | <input checked="" type="checkbox"/> |               |  |
| DuPont                        | Vertrel CCA            | 100      | 99.46       | <input checked="" type="checkbox"/> |               |  |
| DuPont                        | Vertrel MCA            | 100      | 99.27       | <input checked="" type="checkbox"/> |               |  |
| Micro Care                    | Heavy Duty Degreaser C | 100      | 99.17       | <input checked="" type="checkbox"/> |               |  |
| Micro Care                    | Flux Remover C         | 100      | 98.97       | <input checked="" type="checkbox"/> |               |  |
| 3M                            | HFE 7100               | 100      | 81.26       | <input type="checkbox"/>            |               |  |
| 3M                            | HFE 7200               | 100      | 90.33       | <input checked="" type="checkbox"/> |               |  |
| Enviro Tech International Inc | Ensolv A               | 100      | 100.04      | <input checked="" type="checkbox"/> |               |  |
| Kyzen Corporation             | Metalnox M6960         | 100      | 99.52       | <input checked="" type="checkbox"/> |               |  |
| Poly Systems USA Inc          | Solvon Kreussler PB    | 100      | 100.02      | <input checked="" type="checkbox"/> |               |  |
| Poly Systems USA Inc          | Solvon Kreussler IP    | 100      | 99.83       | <input checked="" type="checkbox"/> |               |  |
| Dow Chemical Company          | OS 10                  | 100      | 91.43       | <input checked="" type="checkbox"/> |               |  |
| Dow Chemical Company          | OS 20                  | 100      | 87.79       | <input checked="" type="checkbox"/> |               |  |
| Dow Chemical Company          | OS 30                  | 100      | 87.23       | <input checked="" type="checkbox"/> |               |  |

Conclusion: Thirteen of the fourteen products removed over 85%.