

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004  
 DateRun: 05/07/2004  
 Experimenters: Jason Marshall  
 ClientType: Jewelry Mfr  
 ProjectNumber: Project #2  
 Substrates: Sterling/Silver  
 PartType: Coupon  
 Contaminants: Oil  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Gravimetric  
 Purpose: To evaluate an additional five products on the first contaminant

Experimental Procedure: Five products were selected based on success on the fourth supplied contaminant. All five products were used at full strength in a 250 ml beaker. Two products were heated to 96 F on a hot plate and the three Dow products were used at room temperature. Twenty-seven preweighed silver plated copper coupons were coated with the Exxon Mobil Vacmul 03D (94741-44-2) using a hand held 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 stir-bar agitation. After cleaning parts were weighed a final time and efficiencies were calculated.

Results: All five products tested on the oil removed over 97% in five minutes. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon.

| Cleaner   | Initial wt | Final wt | % Removed |
|-----------|------------|----------|-----------|
| Solvon PB | 0.0662     | -0.0003  | 100.45    |
|           | 0.1293     | 0.0011   | 99.15     |
|           | 0.1018     | 0.0006   | 99.41     |
| Solvon IP | 0.0773     | 0.0003   | 99.61     |
|           | 0.0920     | 0.0011   | 98.80     |
|           | 0.0770     | 0.0026   | 96.62     |
| OS 10     | 0.0997     | 0.0021   | 97.89     |
|           | 0.0839     | 0.0005   | 99.40     |
|           | 0.0722     | 0.0014   | 98.06     |
| OS 20     | 0.0944     | 0.0038   | 95.97     |
|           | 0.0976     | 0.0018   | 98.16     |
|           | 0.0616     | 0.0014   | 97.73     |
| OS 30     | 0.1107     | 0.0020   | 98.19     |
|           | 0.0522     | 0.0013   | 97.51     |
|           | 0.0603     | 0.0013   | 97.84     |

Summary:

| <b>Substrates:</b>   |                     | Sterling/Silver |             |                                     |               |  |
|----------------------|---------------------|-----------------|-------------|-------------------------------------|---------------|--|
| <b>Contaminants:</b> |                     | Oil             |             |                                     |               |  |
| Company Name:        | Product Name:       | Conc.:          | Efficiency: | Effective:                          | Observations: |  |
| Poly Systems USA Inc | Solvon Kreussler PB | 100             | 99.67       | <input checked="" type="checkbox"/> |               |  |
| Poly Systems USA Inc | Solvon Kreussler IP | 100             | 98.35       | <input checked="" type="checkbox"/> |               |  |
| Dow Chemical Company | OS 10               | 100             | 98.45       | <input checked="" type="checkbox"/> |               |  |
| Dow Chemical Company | OS 20               | 100             | 97.29       | <input checked="" type="checkbox"/> |               |  |
| Dow Chemical Company | OS 30               | 100             | 97.85       | <input checked="" type="checkbox"/> |               |  |

Conclusion: The three Dow products will be tested on the second supplied oil.