

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2009  
 DateRun: 02/10/2009  
 Experimenters: Johanna Oviedo  
 ClientType: Lab  
 ProjectNumber: Project #1  
 Substrates: Plastic  
 PartType: Coupon  
 Contaminants: Inks  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Gravimetric  
 Purpose: To remove graphite from plastic surfaces

Experimental Procedure: Basic cleaning performance testing was conducted using ASTM G122 as the bases for cleaning. Products were selected based on the compatibility of substrate and for removal of the contaminant. Ten percent concentrations were used and heated the samples at 130F. The coupons were immersed in a product for 5 minutes, rinsed in tap water at 120 F and dried using compressed air at room temperature. Coupons were coated with graphite using a handheld swab and allowed to dry for 120 minutes at room temperature. The contaminated coupons were weighed again to determine the amount of soil added. After cleaning process, the final weights were recorded, efficiencies were calculated and recorded.

| Cleaner             | Initial wt | Final wt | % Removed |
|---------------------|------------|----------|-----------|
| Sea wash            |            |          |           |
|                     | 0.0083     | 0.0078   | 6.02      |
|                     | 0.0067     | 0.0049   | 26.87     |
|                     | 1.0046     | 0.0038   | 99.62     |
| Simple Green        |            |          |           |
|                     | 0.0044     | 0.0041   | 6.82      |
|                     | 0.0073     | 0.0080   | -9.59     |
|                     | 0.0038     | 0.0031   | 18.42     |
| Micro 90            |            |          |           |
|                     | 0.0037     | 0.0090   | -143.24   |
|                     | 0.0049     | 0.0052   | -6.12     |
|                     | 0.0061     | 0.0083   | -36.07    |
| Sc Aircraft & Metal |            |          |           |
|                     | 0.0020     | 0.0018   | 10.00     |
|                     | 0.0054     | 0.0052   | 3.70      |
|                     | 0.0083     | 0.0404   | -386.75   |
| Sky Gold 1000       |            |          |           |
|                     | -0.9965    | 0.0297   | 102.98    |
|                     | 0.0074     | 0.0638   | -762.16   |
|                     | 0.0076     | 0.0185   | -143.42   |
| Maxisolv            |            |          |           |
|                     | 0.0035     | 0.0098   | -180.00   |
|                     | 0.0091     | 0.0125   | -37.36    |
|                     | 0.0033     | 0.0062   | -87.88    |
| SWR One             |            |          |           |
|                     | 0.0038     | 0.1547   | 3971.05   |
|                     | 0.0035     | -0.1436  | 4202.86   |
|                     | 0.0126     | 0.0143   | -13.49    |

Summary:

|                      |                      |               |                    |                   |                      |  |
|----------------------|----------------------|---------------|--------------------|-------------------|----------------------|--|
| <b>Substrates:</b>   | Plastic              |               |                    |                   |                      |  |
| <b>Contaminants:</b> | Inks                 |               |                    |                   |                      |  |
| <b>Company Name:</b> | <b>Product Name:</b> | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b> | <b>Observations:</b> |  |

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|                                    |   |    |         |                          |  |
|------------------------------------|---|----|---------|--------------------------|--|
| Warren Chemical Company            | Sea Wash Cleaner                              | 10 | 44.17   | <input type="checkbox"/> |  |
| Simple Green                       | Simple Green D                                | 10 | 5.22    | <input type="checkbox"/> |  |
| International Products Corporation | Micro 90 Conc.                                | 10 | -61.81  | <input type="checkbox"/> |  |
| Gemtek Products                    | SC Aircraft & Metal Cleaner Super Concentrate | 10 | -124.35 | <input type="checkbox"/> |  |
| AG Environmental Products          | Soy Gold 1000                                 | 10 | -267.53 | <input type="checkbox"/> |  |
| Gemtek Products                    | Safe Care (SC) Maxi Solv                      | 10 | -101.75 | <input type="checkbox"/> |  |
| SWR Corporation                    | SWR One                                       | 10 | 72.75   | <input type="checkbox"/> |  |

Conclusion: Results were inconclusive with many of the products have erratic removal rates.