

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2009

DateRun: 02/24/2009

Experimenters: Johanna Oviedo

ClientType: Lab

ProjectNumber: Project #1

Substrates: Alloys

PartType: Coupon

Contaminants: Hucker's Soil

Cleaning Methods: Immersion/Soak

Analytical Methods: Visual

Purpose: To test nontoxic industrial cleaning solutions for oil removal

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 removal of foreign substance. Used 10% concentration and heated the samples at 135F. The steel coupons were immersed in a product for 5 minutes, rinsed for 30 seconds in tap water at 120F and dried in 30 seconds using compressed air is room temperature. Coupons were coated with used oil. Using a handheld swab and allowed to dry for 144 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            |            |          |           |
|                     | 0.1187     | 0.0008   | 99.33     |
|                     | 0.0321     | 0.0095   | 70.40     |
|                     | 0.0426     | 0.0061   | 85.68     |
| Simple Green        |            |          |           |
|                     | 0.0951     | 0.0471   | 50.47     |
|                     | 0.0152     | 0.0022   | 85.53     |
|                     | 0.0365     | 0.0063   | 82.74     |
| Micro 90            |            |          |           |
|                     | 0.3525     | 0.1084   | 69.25     |
|                     | 0.0321     | 0.0081   | 74.77     |
|                     | 0.0778     | 0.0159   | 79.56     |
| Sc Aircraft & Metal |            |          |           |
|                     | 0.0228     | 0.0088   | 61.40     |
|                     | 0.0392     | 0.0170   | 56.63     |
|                     | 0.0264     | 0.0196   | 25.76     |
| Sky Gold 1000       |            |          |           |
|                     | 0.0090     | 0.0028   | 68.89     |
|                     | 0.1455     | 0.0636   | 56.29     |
|                     | 0.3273     | 0.2574   | 21.36     |
| Maxisolv            |            |          |           |
|                     | 0.0351     | 0.0154   | 56.13     |
|                     | 0.2829     | 0.0612   | 78.37     |
|                     | 0.0755     | 0.0360   | 52.32     |
| SWR One             |            |          |           |
|                     | 0.0142     | 0.0014   | 90.14     |
|                     | 0.0188     | 0.0121   | 35.64     |
|                     | 0.0083     | 0.0040   | 51.81     |

|          |                      |                      |               |                    |                   |                      |
|----------|----------------------|----------------------|---------------|--------------------|-------------------|----------------------|
| Summary: |                      |                      |               |                    |                   |                      |
|          | <b>Substrates:</b>   | Alloys               |               |                    |                   |                      |
|          | <b>Contaminants:</b> | Hucker's Soil        |               |                    |                   |                      |
|          | <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 77                                   | 10  | 85.14 | <input checked="" type="checkbox"/> |  |
| Simple Green                       | Simple Green D                                | 10  | 72.91 | <input type="checkbox"/>            |  |
| International Products Corporation | Micro 90 Conc.                                | 10  | 74.53 | <input type="checkbox"/>            |  |
| Gemtek Products                    | SC Aircraft & Metal Cleaner Super Concentrate | 10  | 47.93 | <input type="checkbox"/>            |  |
| AG Environmental Products          | Soy Gold 1000                                 | 100 | 48.84 | <input type="checkbox"/>            |  |
| Gemtek Products                    | Safe Care (SC) Maxi Solv                      | 10  | 62.27 | <input type="checkbox"/>            |  |
| SWR Corporation                    | SWR One                                       | 10  | 59.20 | <input type="checkbox"/>            |  |

Conclusion: One product removed over 85% of the Hucker's soil (all-purpose janitorial soil) from alloys using immersion cleaning.