

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2003  
DateRun: 09/19/2003  
Experimenters: Jason Marshall  
ClientType: Tool Manufacturer  
ProjectNumber: Project #1  
Substrates: Steel  
PartType: Coupon  
Contaminants: Paints  
Cleaning Methods: Immersion/Soak  
Analytical Methods: Gravimetric

Purpose: To evaluate the eight cleaners on the final contaminant

Experimental Procedure: The eight cleaners from the previous trials were used for the removal of the paint/varnish mix from steel coupons. Six products were used at full strength and two (Inproclean 3800 & SC Aircraft) were diluted to 10% using DI water in 250 ml beakers. Six products were used at room temperature and two (E3HB & SC Aircraft) were heated to 120 F based on past testing results. Twenty-four preweighed coupons were coated with the varnish and allowed to dry. Once dry, coupons were weighed again to determine the amount of varnish that was added to the coupons. Three coupons were immersed in each solution for 10 minutes with no agitation. Coupons were then rinsed/dried using air blow off at room temperature for 30 seconds. Coupons were weighed a final time and efficiencies for each cleaner was calculated.

Contaminant: Varnish Mix - Cooper's Creek Chemicals, Cooper Black Tank Paint No 739 (64742-89-8, 8052-42-4, 108-88-3); Sherwin Williams Company, V74B2 Black Asphaltum coating (64742-89-8, 64742-88-7, 8052-42-4).

Results: Only one products was very successful in removing the varnish mix after 10 minutes of soaking. The varnish that was cleaned in 278 Super Solv was dissolved by the cleaner. There was some residue on the coupons at the end of the 10 minutes, but was easily removed with the air blow off. Increasing the cleaning time may result in all of the varnish being dissolved by the cleaner. A second cleaner, D Greeze 1000 was the next successful cleaner, removing just over 80% of the paint. A third cleaner, AK 225 did start to alter the varnish. During the air blow off, flakes of the varnish were blown off. Most of the other cleaners had little effect on the varnish mix. The table below lists the amount of contaminant added and remaining for each coupon cleaned.

| Cleaner                     | Initial wt | Final wt | % Removed |
|-----------------------------|------------|----------|-----------|
| AK 225                      | 0.1861     | 0.0747   | 59.86     |
|                             | 0.0335     | 0.0132   | 60.60     |
|                             | 0.0887     | 0.0452   | 49.04     |
| DS 108                      | 0.0711     | 0.0713   | -0.28     |
|                             | 0.0331     | 0.0305   | 7.85      |
|                             | 0.0433     | 0.0418   | 3.46      |
| Beyond 2008                 | 0.1022     | 0.1063   | -4.01     |
|                             | 0.0847     | 0.0843   | 0.47      |
|                             | 0.1215     | 0.1194   | 1.73      |
| D Greeze 1000               | 0.0699     | 0.0133   | 80.97     |
|                             | 0.0935     | 0.0082   | 91.23     |
|                             | 0.0860     | 0.0202   | 76.51     |
| 278 Super Solv              | 0.1136     | 0.0095   | 91.64     |
|                             | 0.0554     | 0.0048   | 91.34     |
|                             | 0.0963     | 0.0121   | 87.44     |
| Inproclean 3800             | 0.0301     | 0.0468   | -55.48    |
|                             | 0.1220     | 0.0989   | 18.93     |
|                             | 0.0642     | 0.0794   | -23.68    |
| E3HB                        | 0.0659     | 0.0580   | 11.99     |
|                             | 0.0593     | 0.0541   | 8.77      |
|                             | 0.0510     | 0.0486   | 4.71      |
| SC Aircraft & Metal Cleaner | 0.0718     | 0.0696   | 3.06      |
|                             | 0.0935     | 0.0804   | 14.01     |

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|--|--------|--------|--------|
|  | 0.0343 | 0.0408 | -18.95 |
|--|--------|--------|--------|

Summary:

|                        |   |               |                    |                                     |                      |
|------------------------|---|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>     | Steel   |               |                    |                                     |                      |
| <b>Contaminants:</b>   | Paints  |               |                    |                                     |                      |
| <b>Company Name:</b>   | <b>Product Name:</b>                          | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| AGA Chemical           | AK 225  | 100           | 56.50              | <input type="checkbox"/>            |                      |
| Dysol                  | DS 108 Wipe Solvent                           | 100           | 3.68               | <input type="checkbox"/>            |                      |
| Today & Beyond         | Beyond 2008                                   | 100           | -0.60              | <input type="checkbox"/>            |                      |
| Transene Company, Inc. | D Greeze 1000                                 | 100           | 82.90              | <input checked="" type="checkbox"/> |                      |
| AW Chesterton          | 278 Super Solv                                | 100           | 90.14              | <input checked="" type="checkbox"/> |                      |
| Oakite Products        | Inproclean 3800                               | 10            | -20.07             | <input type="checkbox"/>            |                      |
| Metabolix Inc          | Metabolix E3HB                                | 100           | 8.49               | <input type="checkbox"/>            |                      |
| Gemtek Products        | SC Aircraft & Metal Cleaner Super Concentrate | 10            | -0.63              | <input type="checkbox"/>            |                      |

Conclusion:

Three products will be retested in an attempt to improve cleaning efficiency. These products are AK 225, D Greeze 1000 and 278 Super Solv.