

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008  
 DateRun: 04/09/2008  
 Experimenters: Ephraim Massawe  
 ClientType: Lab  
 ProjectNumber: Project #1  
 Substrates: Aluminum  
 PartType: Coupon  
 Contaminants: Cutting/Tapping Fluids  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Gravimetric

Purpose: removing cutting fluid off of the surface of aluminum by using non-toxic cleaners.

Experimental Procedure: Basic cleaning performance testing was conducted using ASTM G122 as the bases for cleaning. Products were based on the compatibility of substrate and removal of foreign substance. Used 5% concentration and heated the samples at 135F. The coupons were immersed in a product for 5 minutes, rinsed for 30 seconds in tap water at 120F and dried in 30 seconds

| Cleaner                       | Initial wt | Final wt | % Removed |
|-------------------------------|------------|----------|-----------|
| aquavantage 1400 GD           |            |          |           |
|                               | 0.9980     | 0.0412   | 95.87     |
|                               | 0.7371     | 0.0398   | 94.60     |
|                               | 0.8273     | 0.0116   | 98.60     |
| Amberclean L12                |            |          |           |
|                               | 1.1533     | 0.0028   | 99.76     |
|                               | 0.8348     | 0.0018   | 99.78     |
|                               | 0.4512     | 0.0063   | 98.60     |
| Seawash Blue                  |            |          |           |
|                               | 0.9970     | 0.0144   | 98.56     |
|                               | 0.8899     | 0.0143   | 98.39     |
|                               | 0.8744     | 0.0092   | 98.95     |
| SC aircraft and metal cleaner |            |          |           |
|                               | 0.5912     | 0.0578   | 90.22     |
|                               | 0.9434     | 0.0421   | 95.54     |
|                               | 0.7929     | 0.0634   | 92.00     |

|          |                         |   |               |                    |                                     |                      |
|----------|-------------------------|---|---------------|--------------------|-------------------------------------|----------------------|
| Summary: | <b>Substrates:</b>      | Aluminum                                      |               |                    |                                     |                      |
|          | <b>Contaminants:</b>    | Cutting/Tapping Fluids                        |               |                    |                                     |                      |
|          | <b>Company Name:</b>    | <b>Product Name:</b>                          | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
|          | Brulin Corporation      | Aquavantage 1400                              | 5             | 96.36              | <input checked="" type="checkbox"/> |                      |
|          | Warren Chemical Company | Sea Wash Blue                                 | 5             | 98.63              | <input checked="" type="checkbox"/> |                      |
|          | Gemtek Products         | SC Aircraft & Metal Cleaner Super Concentrate | 5             | 92.59              | <input checked="" type="checkbox"/> |                      |
|          | Innovative Organics Inc | Amberclean L 12                               | 10            | 99.38              | <input checked="" type="checkbox"/> |                      |

Conclusion: All products tested has passed the contaminant removal of 85% or higher.