

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008  
 DateRun: 03/04/2008  
 Experimenters: Jason Marshall, Shweta Bansal  
 ClientType: Aluminum Anodizing Job Shop  
 ProjectNumber: Project #2  
 Substrates: Aluminum  
 PartType: Coupon  
 Contaminants: Coatings  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Gravimetric

Purpose: To evaluate top two performing products using extended immersion cleaning

Experimental Procedure: Two products selected from the previous trials based on performance used at full strength and room temperature to simulate current cleaning practice. Six preweighed 5052 Aluminum coupons were coated with the Stan Chem Inc Red Stop Off (78-93-3, 108-88-3) lacquer using a handheld swab. The coating was allowed to dry for about an hour. Once dry, the coupons were coated a second and third time to more closely match the amount of lacquer applied supplied parts. Once the coating color matched the supplied parts, coupons were weighed a second time to determine the amount of Red Stop Off applied. Three coupons were immersed into each solution and cleaned for 1200 minutes without agitation. Observations were made at 60, 120 and 1200 minutes. Rinsing was performed for 15 seconds using tap water heated to 120 F and followed by 30 seconds of air blow off with dry compressed air at room temperature. Final weights were recorded after the 1200 minutes (20 hours) and efficiencies were calculated for each coupon cleaned.

Results: After 60 minutes both products showed good removal of the coating. The table below lists the observations made at 60 minutes, 120 minutes and 1200 minutes.

| Cleaner       | Initial wt | Final wt | % Removed |
|---------------|------------|----------|-----------|
| Shopmaster RC | 0.6339     | 0.5216   | 17.72     |
|               | 0.5547     | 0.1827   | 67.06     |
|               | 0.6915     | 0.7289   | -5.41     |
| SC Actisolv   | 0.6383     | 1.1382   | -78.32    |
|               | 0.4960     | 0.8404   | -69.44    |
|               | 0.5625     | 0.9896   | -75.93    |

Cleaning efficiencies for each coupon after 2 and 20 hours of room temperature immersion.

| Cleaner              | Initial wt | Final wt | % Removed |
|----------------------|------------|----------|-----------|
| Shopmaster RC 20 hrs | 0.6339     | 0.0065   | 98.97     |
|                      | 0.5547     | 0.0041   | 99.26     |
|                      | 0.6915     | 0.0026   | 99.62     |
| SC Actisolv 20 hrs   | 0.6383     | 0.0185   | 97.10     |
|                      | 0.4960     | 0.0018   | 99.64     |
|                      | 0.5625     | 0.0006   | 99.89     |

Summary:

|                       |                            |               |                    |                                     |                      |
|-----------------------|----------------------------|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>    | Aluminum                   |               |                    |                                     |                      |
| <b>Contaminants:</b>  | Coatings                   |               |                    |                                     |                      |
| <b>Company Name:</b>  | <b>Product Name:</b>       | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| Buckeye International | Shopmaster RC              | 100           | 99.29              | <input checked="" type="checkbox"/> |                      |
| Gemtek Products       | SC Actisolv Safety Solvent | 100           | 98.88              | <input checked="" type="checkbox"/> |                      |

Conclusion: Both products were very effective in removing the multiple coats of the lacquer using immersion soaking at room temperature. The next step will be to clean supplied parts using both ultrasonic cleaning and the extended immersion soaking.