

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002
 DateRun: 08/29/2002
 Experimenters: Jason Marshall
 ClientType: Chemical Company
 ProjectNumber: Project #1
 Substrates: Aluminum
 PartType: Coupon
 Contaminants: Coatings
 Cleaning Methods: Ultrasonics
 Analytical Methods: Gravimetric

Purpose: To evaluate successful cleaners on fourth contaminant.

Experimental Procedure: The four successful products from the previous trial were again used at full strength and room temperature. An additional product was added to the trial for comparative purposes. All five products were used in 600 ml beakers and degassed for 5 minutes in a Crest 40 kHz ultrasonic tank. Fifteen preweighed coupons were coated with Emerson & Cuming CS-6001 Conductive Silicone (7440-22-4, silicone resin, silicone cross linker) using a hand held swab. Coupons were allowed to sit for 20 minutes and then weighed again. Three coupons were cleaned in each beaker for 5 minutes using ultrasonics. Coupons were rinsed for 15 seconds in a tap water bath at 68 F and dried for 2 minutes using air knives also at 68 F. Once dried, final weights were recorded and efficiencies calculated for each cleaner.

Results: Three of the five products, Both the Bio Chem System products and the Vertec BioSolvents, removed over 90% of the contaminant from the aluminum coupons. The Vertec BioSolvents product did not rinse well under the trial settings. The table below lists the efficiency for each coupon cleaned during the trial.

Table 1. Cleaning Effectiveness

| Cleaner | Initial wt | Final wt | % Removed |
|------------------|------------|----------|-----------|
| Bio T Max | 0.9493 | 0.0143 | 98.49 |
| | 1.4445 | 0.1793 | 87.59 |
| | 1.0391 | 0.1249 | 87.98 |
| Solsafe 245 | 1.1709 | 0.0064 | 99.45 |
| | 0.2641 | 0.0035 | 98.67 |
| | 0.7257 | 0.0067 | 99.08 |
| DS-108 | 0.7291 | 0.1912 | 73.78 |
| | 0.4363 | 0.0002 | 99.95 |
| | 0.6375 | 0.2019 | 68.33 |
| Ionox HC 2 | 0.9186 | 0.6132 | 33.25 |
| | 0.9347 | 0.2912 | 68.85 |
| | 0.5509 | 0.2851 | 48.25 |
| VertecBio Gold 2 | 0.2742 | 0.0160 | 94.16 |
| | 0.1432 | 0.0096 | 93.30 |
| | 0.1783 | 0.0145 | 91.87 |

Summary:

| Substrates: | Aluminum | | | | |
|----------------------|---------------------------------------|--------|-------------|-------------------------------------|---------------|
| Contaminants: | Coatings | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Bio Chem Systems | Bio T Max | 100 | 91.35 | <input checked="" type="checkbox"/> | |
| Bio Chem Systems | Solsafe 245 | 100 | 99.07 | <input checked="" type="checkbox"/> | |
| Dysol | DS 108 Wipe Solvent | 100 | 80.69 | <input type="checkbox"/> | |
| Kyzen Corporation | Ionox HC 2 | 100 | 50.11 | <input type="checkbox"/> | |
| Vertec BioSolvents | VertecBio Gold Unscented Part Cleaner | 100 | 93.11 | <input checked="" type="checkbox"/> | |

Conclusion: Please contact the lab to obtain vendor contact information for successful products to be used during pilot testing at client facility.