

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999  
 DateRun: 06/17/1999  
 Experimenters: Jason Marshall  
 ClientType: Microelectronics Mfr  
 ProjectNumber: Project #1  
 Substrates: Aluminum  
 PartType: Coupon  
 Contaminants: Fluxes, Resins/Rosins  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: Gravimetric

Purpose: To determine if a longer soak would aid in the removal of the contaminant.

Experimental Procedure: The same eight cleaning products were selected for testing. The temperature was ambient conditions and the cleaning times were 3 and 8 hours. Twenty-four preweighed coupons were contaminated with an excess amount of the negative photoresist and weighed again. Three coupons were placed into a beaker and cleaned for ten minutes using stir-bar agitation. At the end of the cleaning, coupons were rinsed in a tap water bath for 30 seconds at 120 F and allowed to air dry over night. Final weights were recorded and cleaning efficiencies determined.

SUBSTRATE MATERIAL: Aluminum Coupons (202-1100 H-14)

CONTAMINANTS: Olin HNR 120 Negative Photoresist (CAS#s: 1330-20-7 [65-70%]; 100-41-4 [15-18%]; 68441-13-4 [9-15%]; 5284-79-7 [0.1-0.6%])

CONTAMINATING PROCESS USED: Coupons were coated with contaminant using a hand held swab and allowed to sit for one hour.

Results: The results from additional cleaning did not improve very much for any of the cleaners. Observations were made that two of the cleaners, Envirosolution's Bio-T Max and Oakite's Inproclean 4000 T, had softened the contaminant to the point that the contaminant could be wiped off. A third cleaner, Brulin's Compliance, caused the contaminant to be peeled off. Table 2 lists the efficiencies of all three cleaning times and the observations made.

Table 2. Cleaning Efficiencies at the Cleaning Intervals

	Brulin	Enviro	Fine Org	Oakite	T-Square	Gemtek	Kyzen	Loctite
10 min	71.62	64.9	73.01	62.85	69.66	72.2	75.65	73.92
180 min	75.3	65.15	73.98	68.67	72.6	76.8	76.95	76.22
480 min	75.77	65.1	74.36	68.05	72.78	74.72	77.57	76.68
Comments	peel	wipe	wipe					

Summary:

<b>Substrates:</b>		Aluminum			
<b>Contaminants:</b>		Fluxes, Resins/Rosins			
<b>Company Name:</b>	<b>Product Name:</b>	<b>Conc.:</b>	<b>Efficiency:</b>	<b>Effective:</b>	<b>Observations:</b>
Brulin Corporation	Compliance	10	75.77	<input checked="" type="checkbox"/>	
Bio Chem Systems	Bio T Max	10	65.10	<input checked="" type="checkbox"/>	
Fine Organic Corporation	FO 2085 M	10	74.36	<input type="checkbox"/>	
Oakite Products	Inproclean 4000 T	10	68.05	<input checked="" type="checkbox"/>	
Tarksol Inc	Tarksol HTF 85 B	10	72.78	<input type="checkbox"/>	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	10	74.72	<input type="checkbox"/>	
Kyzen Corporation	Ionox FCR (For Comparison Only)	100	77.57	<input type="checkbox"/>	
Loctite Corporation	7360	100	76.68	<input type="checkbox"/>	

Conclusion: The three cleaners which altered the contaminant to the point of easy removal will be tested again at full strength. The other five cleaners may be retested also at full strength depending upon the results of the other three cleaners.