CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999

DateRun: 06/14/1999

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 find a replacement for xylene in cleaning negative photoresist from equipment used to coat wafers.

Experimental Procedure: Eight cleaning products were selected based on vendor information and from the lab's Effective Test Conditions Database based on past cleaning trials. Two products were used at full strength and the other six were diluted to 10% by volume using DI water in 600 mL beakers. Cleaning was performed at room temperature.
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 for one hour. 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: Most of the cleaners were moderately successful in cleaning a majority of the contaminant from the coupons. Efficiencies ranged from ~63 to 76%, with Envirosolutions being the lowest and Kyzen the highest. Table 2 lists the cleaning efficiencies for each of the eight cleaners tested.

Table 2. Cleaning Results

Cleaner	Brulin	Envirosolutions	Fine Organics	Oakite	T-Square	Gemtek	Kyzen	Loctite
Coupon 1	70.43	64.77	70.20	59.20	70.44	69.27	73.81	73.54
Coupon 2	72.34	65.66	77.16	68.95	70.19	73.21	75.47	74.60
Coupon 3	72.08	64.29	71.68	60.40	68.35	74.12	77.68	73.61
Ave	71.62	64.90	73.01	62.85	69.66	72.20	75.65	73.92

Summary:

Substrates:	Aluminum				
Contaminants:	Fluxes, Resins/Rosins				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Brulin Corporation	Compliance	10	71.62	☑	
Bio Chem Systems	Bio T Max	10	64.90	☐	
Fine Organic Corporation	FO 2085 M	10	73.01	☑	
Oakite Products	Inproclean 4000 T	10	62.85	☐	
Tarksol Inc	Tarksol HTF 85 B	10	69.66	☐	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	10	72.20	☐	
Kyzen Corporation	Ionox FCR (For Comparison Only)	100	75.65	☑	
Loctite Corporation	7360	100	73.92	☑	

Conclusion: Having obtained moderate success with the short cleaning time, a follow up test will be run with a longer cleaning time. All other parameters will be kept the same.