CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1999
DateRun:	07/19/1999
Experimenters:	Jason Marshall, Nicole Vayo
ClientType:	Microelectronics Mfr
ProjectNumber:	Project #1
Substrates:	Aluminum
PartType:	Part
Contaminants:	Fluxes, Resins/Rosins
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Visual
Purpose:	To evaluate successful cleaner on actual parts.
Experimental Procedure:	The cleaning solution was used at full strength and at room temperature. The solution was poured into tall cylinder to just submerge the tubes (15") and allowed to sit for seven hours. Observations were made every hour. At each interval the part was removed from the solution and any remaining contaminant was wiped by hand to determine how easily the negative photoresist was removed. After the seven hour cleaning was complete, the tubes were not completely cleaned, and were soaked overnight in the cleaner. Finally, the parts were rinsed in a tap water spray for five minutes at 120 F and air dried overnight. SUBSTRATE MATERIAL: Aluminum Tubes (parts) 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%])
Results:	The contaminant was effectively removed from the aluminum tubes after soaking for several hours in the Envirosolutions product. Table 2 lists the observations made throughout the cleaning cycle.

Table 1. Cleaning Results

Time (hours)	OBSERVATIONS MADE
2	Some dissolving of contaminant; softening of contaminant; some could be wiped off
3	Really good dissolving; thick clumps becoming very soft
4	Sections of inner wall free of contaminant; thick clumps dissolving
5	Contaminant running down wall and building up at bottom; thick clumps becoming smaller
6	Continued dissolving
7	Thick clumps almost gone; some still lining the walls-leave overnight
24	Very small clumps along bottom rim of tube; every where else clear of contaminant

Summary:

Substrates:	Aluminum				
Contaminants:	Fluxes, Resins/Rosins				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Bio Chem Systems	Bio T Max	100	0.00	☑	

Conclusion: Envirosolutions Bio-T Max proved to be very effective in removing the negative photoresist from the aluminum tubes. Most of the contaminant was removed within a seven hour period. The parts which were cleaned had been sitting for an extended period of time, allowing the contaminant to harden making cleaning more difficult than if the parts were cleaned when the negative photoresist was still soft.