CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1999

DateRun: 06/28/1999

Experimenters: Jason Marshall

ClientType: Plating Job Shop

ProjectNumber: Project #2

Substrates: Aluminum

PartType: Coupon

Contaminants: Waxes

Cleaning Methods: Ultrasonics

Analytical Methods:

Purpose: To further evaluate the one cleaner capable of removing the wax from the previous trial.

Experimental Procedure: The cleaner from the previous trial was further examined to enhance the cleaning efficiency. Water was also tested in the ultrasonic cleaning method. Table 1 lists the cleaning solution used. By altering the parameters of the cleaning cycle, several different operating conditions were created and examined. Temperature (room and 130 F), time (5 and 10 min) and agitation (Immersion and Ultrasonics) were the specific parameters investigated.
Three coupons were cleaned for each set of parameters, rinsed at 120 F for 30 seconds, and dried at room temperature for two hours.
CONTAMINATING PROCESS USED: Wax was heated using a Master Appliance Corp, Hot-air gun model HG at 500 F. Coupons were allowed to cool to room temperature.

Results: A couple of cleaning methods proved successful in the removal of the wax from the coupons. Ultrasonics (Crest 40 kHz ultrasonic tank model 4Ht 1014-6) at room temperature for five minutes was very effective, as was immersion cleaning at 130^{O}F for ten minutes. Table 2 lists the operating conditions and efficiencies.

Table of Cleaning Efficiencies						
Cleaner	Envirosolution Bio-T Max				Water	
Time	10	10	5	5	5	10
Temp	Room	130	130	Room	room	room
Agitation	Immersion	Immersion	Immersion	Ultrasonic	Ultrasonic	Ultrasonic
Coupon 1	8.08	57.19	65.86	99.72	0.38	4.14
Coupon 2	1.23	58.96	32.09	99.65	0.41	4.71
Coupon 3	6.06	78.91	45.67	99.84	0.58	5.23
Ave	**5.12**	**65.02**	**47.88**	**99.74**	**0.46**	**4.69**
Std Dev	**3.52**	**12.06**	**16.99**	**0.09**	**0.11**	**0.54**

Summary:

Substrates:	Aluminum				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Bio Chem Systems	Bio T Max	100	99.74	☑	
Water	Water	100	4.69	☐	

Conclusion: Envirosolutions Bio-T Max in conjunction with ultrasonic energy removed nearly all of the wax from the coupons. The heated cleaning solution was moderately successful in removing the contaminant after ten minutes. A longer soaking time and or higher temperatures could further increase the efficiency of the cleaning solution. Client supplied parts will be cleaned next and returned for inspection.