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: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To find a replacement for TCE in wax removal from multiple substrates.

Experimental Procedure: Seven cleaners were selected based on vendor supplied information and using the lab's Effective Tests Conditions Database. Five of the seven were made into 5% solutions using DI water in 400 mL beakers. The beakers were heated to 130 F on a hot plate. The remaining two chemistries were used at full strength and at room temperature. Table 1 lists the products used and their dilutions.
Twenty-one preweighed coupons were coated with wax and weighed again after returning to room temperature. Three coupons were immersed in the cleaning solutions and soaked for five minutes. Coupons were rinsed in tap water at 120 F for 30 seconds and air dried for two hours. Final weights were recorded, and cleaning efficiencies were calculated.

CONTMINATING 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: The cleaners selected had limited success in the removal of the contaminant from the coupons. A couple of the cleaners started to dissolve the wax at the end of the five minutes. Only one cleaner, Envirosolutions, showed any definite signs of removing the wax. Table 2 lists the cleaning efficiencies and the observations made during the experiment.

Table 2. Cleaning Efficiencies

	AW Chest.	Calgon	Oakite	US Poly.	Gemtek	Savogran	Envirosolutions
Coupon 1	-0.465	-0.740	-0.249	0.205	0.691	0.020	2.166
Coupon 2	0.252	-1.483	0.000	0.198	0.025	-0.046	0.841
Coupon 3	-0.104	-0.437	-1.256	0.190	-0.132	-0.146	1.342
Ave	**-0.106**	**-0.887**	**-0.502**	**0.198**	**0.195**	**-0.057**	**1.449**
Std Dev	**0.358**	**0.538**	**0.665**	**0.007**	**0.437**	**0.084**	**0.669**
Observation			Some dissolving	Some dissolving			wipe off

Summary:

Substrates:	Aluminum				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
AW Chesterton	KPC 820 N	5	-0.11	☐	
Calgon Corporation	Geo Guard 2215	5	-0.89	☐	
Oakite Products	Inproclean 3800	5	-0.50	☐	
US Polychem Corporation	Polyspray Jet 790 P	5	0.20	☐	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	5	0.20	☐	
Savogran Company	HD-34 Cleaner Degreaser	100	-0.06	☐	
Bio Chem Systems	Bio T Max	100	1.45	☐	

Conclusion: Envirosolutions Bio-T Max was the only product tested to show any success in removing the wax form the coupon after five minutes of soaking. Additional tests will be conducted using the Bio-T Max product altering the time, temperature and agitation in order to increase the cleaning efficiency.