CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004

DateRun: 02/10/2004

Experimenters: Jason Marshall

ClientType: Manufacturer of Ceramic Capacitors

ProjectNumber: Project #1

Substrates: Ceramics

PartType: Coupon

Contaminants: Waxes

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate successful cleaners using elevated temperatures

Experimental Procedure: Four cleaners were selected from the past trials for this wax. All products were used at full strength also in 250 ml beakers. All products were heated to 100 F on a hot plate. Twelve preweighed ceramic coupons were coated with client supplied wax, Zopher Mills Inc No 1563 Wax (mixture of waxes and resins). The wax was first melted using a Master Appliance heat gun in a beaker and applied directly to the coupon surface. The coupons were allowed to cool to room temperature before weighing a second time. Three coupons were cleaned in each solution for 30 minutes using stir-bar agitation. Coupons were rinsed in tap water for 15 seconds at 120 F, followed by air blow off at room temperature.
Once dry, coupons were weighed a final time and efficiencies for each cleaner were calculated.

Results: All four products removed over 75% of the wax within 30 minutes. Two products, Uni Clear and Bio T 300 B, removed over 90% of the soil. The table lists the amount of soil applied and remaining after cleaning.

Cleaner	Initial wt	Final wt	% Removed
Uni Clear	0.4814	0.0282	94.14
	0.4273	0.0356	91.67
	0.2427	0.0021	99.13
Bio T 300 B	0.3305	0.0168	94.92
	0.2039	0.0031	98.48
	0.3736	0.0712	80.94
D Limonene	0.4211	0.0934	77.82
	0.2797	0.0769	72.51
	0.4047	0.0899	77.79
Citrus Pure	0.5213	0.1064	79.59
	0.3546	0.0032	99.10
	0.3142	0.0631	79.92

Summary:

Substrates:	Ceramics				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Universal Photonics	Uni Clear	100	94.98	☑	
Bio Chem Systems	Bio T 300 B	100	91.45	☑	
Florida Chemical Company	D-Limonene	100	76.04	☑	
Abatement Technologies	Citrus Pure AS850	100	86.20	☑	

Conclusion: All four products will be tested at room temperature using ultrasonic energy.