CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004

DateRun: 02/22/2004

Experimenters: Jason Marshall

ClientType: Manufacturer of Ceramic Capacitors

ProjectNumber: Project #1

Substrates: Ceramics

PartType: Coupon

Contaminants: Paints

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To evaluate partially successful products with ultrasonic cleaning

Experimental Procedure: The two products from the previous trial were heated to 110 F on a hot plate. Six preweighed ceramic coupons were coated with client supplied lacquer, Microshield Stop Off (78-93-3, 108-88-3, 109-99-9, 75-56-9, 842-07-9). The contaminant was applied directly to the coupon surface using a swab. The coupons were allowed to dry at room temperature before weighing a second time. Three coupons were cleaned in each solution for 10 minute intervals, up to 30 minutes, using a Branson 3510 ultrasonic tank. Beakers were suspended in the tank filled with water and degassed for 5 minutes. 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: Both products were successful in removing over 94% of the Stop Off within 10 minutes. The Ink Zapper had a small amount of residue remaining after rinsing. The Metabolix product had no residue after rinsing. The table lists the amount of Stop Off that was added, how much remained after cleaning and the efficiency for each coupon.

Cleaner	Initial wt	Final wt	% Removed
E3HB Ultrasonics	0.0435	0.0006	98.62
	0.0483	0.0000	100.00
	0.0932	-0.0002	100.21
Ink Zapper Ultrasonics	0.0647	0.0033	94.90
	0.0536	0.0036	93.28
	0.0917	0.0042	95.42

Summary:

Substrates:	Ceramics				
Contaminants:	Paints				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Metabolix Inc	Metabolix E3HB	100	99.61	☑	
Vertec BioSolvents	Ink Zapper	100	94.53	☑	

Conclusion: Both products were successful with the addition of ultrasonic energy.