CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004

DateRun: 03/07/2004

Experimenters: Jason Marshall

ClientType: Manufacturer of Ceramic Capacitors

ProjectNumber: Project #1

Substrates: Ceramics

PartType: Coupon

Contaminants: Inks

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To evaluate cleaners on red dye using ultrasonic energy

Experimental Procedure: Two cleaners from the previous trial were diluted to 10% in 250 ml beakers and three other products were used at full strength. All products were suspended in a Branson 3510 ultrasonic tank (40kHz) filled with water and degassed for five minutes. Fifteen preweighed coupons were coated with the dye, Sherwin Incorporated Dubl-Ckek Penetrant DB-51 (68131-40-8). using a hand held swab. Coupons were then reweighed. Three coupons were cleaned in each product for 5 minutes using ultrasonic energy. At the end of cleaning, coupons were rinsed with tap water at 120 F for 15 seconds and dried using air blow off for 30 seconds at 68 F. Once dry, coupons were weighed a final time and efficiencies were calculated.

Results: All five products were successful in removing over 94% of the dye using ultrasonic energy. All five improved over the immersion cleaning methods. DuPont DBE and Metabolix E3HB removed over 98% of the dye. The table below lists the amount of dye added, the amount remaining and the efficiency for each cleaner tested.

Cleaner	Initial wt	Final wt	% Removed
SC Aircraft	0.0295	0.0015	94.92
	0.0248	0.0013	94.76
	0.0242	0.0013	94.63
Micro 90	0.0102	0.0005	95.10
	0.0263	0.0010	96.20
	0.0124	0.0004	96.77
E3HB	0.0314	0.0005	98.41
	0.0344	0.0010	97.09
	0.0335	0.0001	99.70
Ink Zapper	0.0252	0.0002	99.21
	0.0187	0.0004	97.86
	0.0193	0.0006	96.89
DBE 6	0.0327	-0.0001	100.31
	0.0144	0.0005	96.53
	0.0326	0.0006	98.16

Summary:

Substrates:	Ceramics
Contaminants:	Inks

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	10	94.77	☑	
International Products Corporation	Micro 90 Conc.	10	96.02	☑	
Metabolix Inc	Metabolix E3HB	100	98.40	☑	
Vertec BioSolvents	Ink Zapper	100	97.99	☑	
Invista S.a.r.l	Flexisolv DBE 6 ester	100	98.33	☑	

Conclusion: The successful products will be tested on the second dye supplied by the client.