CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2000

DateRun: 02/24/2000

Experimenters: Jason Marshall

ClientType: Mfr Boating Accessories

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Inks

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To further evaluate selected cleaners for the removal of inks.

Experimental Procedure: Three cleaners were selected from the previous trial. The aqueous products was diluted with DI water to 20% in a 600 ml beaker. One of the semi-aqueous products was diluted to 50% and the other was used at full strength. Three sets of nine preweighed coupons were coated with one of the supplied inks and weighed again. Three coupons of the contaminated with the red and gold inks were cleaned in each solution for ten minutes with no agitation. The coupons with the blue ink were soaked overnight. After soaking the coupons were wiped for five minutes using a paper towel. Following the wiping, final clean weights were recorded and efficiencies were calculated.

SUBSTRATE MATERIAL: Stainless Steel Coupons SS-302 B86
CONTAMINANTS: Inks-EMMCorp Thermosetting Inks of ER Series, Blue, Gold, Red
CONTAMINATING PROCESS USED: Coupons were coated with inks using a hand held swab.

Results: The ten minute soaking with the five minute wiping did increase the ink removal for all of the inks. SWR One still had the best removal for all three ink types with cleaning efficiencies from 87-100%. Bio T Max at the ten minute soak removed around 75% of the gold and red inks where as Inproclean cleaned less than 30% of the gold ink and less than 75% of the red ink. Table 2 lists the cleaning efficiencies of the three cleaners for each of the inks. It was noted that after the 24 hour soak, wiping time was significantly less than five minutes.

Table 2. Cleaning Results for Extended Cleaning Times

Cleaner	Inproclean 4000 T			Bio T Max			SWR One		
Ink	Blue	Gold	Red	Blue	Gold	Red	Blue	Gold	Red
Coupon 1	78.92	36.26	72.92	98.95	67.13	70.29	99.97	89.32	88.77
Coupon 2	81.68	23.14	76.06	98.13	76.19	74.05	99.96	96.89	88.30
Coupon 3	96.57	26.60	74.93	88.30	87.08	74.61	99.83	93.72	85.06
Average	85.73	28.67	74.64	95.13	76.80	72.98	99.92	93.31	87.36

Summary:

Substrates:	Stainless Steel				
Contaminants:	Inks				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Oakite Products	Inproclean 4000 T	50	85.73	☑	
Bio Chem Systems	Bio T Max	100	95.13	☑	
SWR Corporation	SWR One	20	99.92	☑	

Conclusion: The 24 hour soak resulted in the best and easiest cleaning of the blue ink from the coupons. The SWR Corp product had the highest efficiency for each of the three inks evaluated.