CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 06/02/1998

Experimenters: Jason Marshall, Prashant Trivedi

ClientType: Printing Company

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Inks

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: Replace current cleaner w/ safer non-TURA chemical

Experimental Procedure: Twenty-four preweighed coupons were coated with the red ink using a swab. The ink was allowed to dry for 3 hours at room temperature. Eight chemistries were selected for testing based on previous laboratory trials and vendor information. The chemistries were heated to 130 F. Three coupons were placed into each cleaner for 3 minutes with stir-bar agitation. Coupons were rinsed in tap water at 120 F for 30 seconds and dried using air-blow off. After sitting for 1 hour, the coupons were weighed to obtain their clean weights. Percent efficiencies were calculated for each cleaner.

SUBSTRATE MATERIAL: Aluminum 6061 T-4
CONTAMINANTS: Ink-Poly 2700 Process Red
CONTAMINATING PROCESS USED: Coupons were painted using swab

Results: None of the chemistries selected performed very well. Table 1 list the individual coupons and the average cleaning efficiencies.

TABLE 1 CLEANING EFFICIENCIES

Chemistry	AG ENV	Brulin	Buckeye	Chrisal	Mirachem	Star Clean	Sunshine	WR Grace
Coupon 1	-11.06	2.79	3.40	3.98	1.92	-1.37	3.81	2.51
Coupon 2	0.00	2.44	2.53	3.13	1.96	2.76	7.27	2.40
Coupon 3	-11.48	6.15	3.74	1.71	0.79	3.57	1.75	
AVE	-7.51	3.79	3.22	2.94	1.56	1.65	4.28	2.45
Std Dev	6.51	2.05	0.62	1.15	0.66	2.65	2.79	0.08

From the table, three cleaners were selected to be tested at full strength. These three cleaners were, Brulin, Buckeye and Sunshine Makers. They were selected because of their higher cleaning efficiencies. It was noted the Soy Gold 1000 appeared to be dissolving the ink. The extra weight gained by the coupons may be cleaner that has gotten under or dissolved into the ink. Soy Gold will also be tested again for a longer period of time to determine if the cleaner is effective in removing the ink.

Summary:

Substrates:	Aluminum				
Contaminants:	Inks				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
AG Environmental Products	Soy Gold 1000	100	-7.51	☐	
Brulin Corporation	Compliance	5	3.79	☐	
Buckeye International	Shopmaster	5	3.22	☐	
Chrisal USA Inc	Super CMF 240	5	2.94	☐	
Mirachem Corporation	Mirachem 500	5	1.56	☐	
By Pas and Star Products	Star Cleaning Miracle # 50	5	1.65	☐	
Simple Green	Concentrated Industrial Strength Cleaner and Degreaser	5	4.28	☐	
Magnaflux	Daraclean 232	5	2.45	☐	

Conclusion: In order to determine if the selected cleaners were effective in removing the ink, an additional test will be conducted. Concentrations will be at full strength and the time of cleaning will be increased to intervals of five minutes.