CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2008
DateRun:	03/23/2008
Experimenters:	Jason Marshall
ClientType:	Machining Company
ProjectNumber:	Project #1
Substrates:	Aluminum
PartType:	Coupon
Contaminants:	Inks
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric
Purpose:	To evaluate selected aqueous based low VOC products for manual removal of ink from aluminum coupons.
Experimental Procedure:	Ten products were selected from the lab's on-line database, www.cleanersolutions.org, based on client supplied information. Products need to have low VOC levels and not contain any hazardous air pollutants. Each product was diluted to 20% using DI Water. Thirty preweighed aluminum coupons were coated with the supplied Dykem red marking ink using the supplied brush. Once the coupons were dry, a second weight was recorded to determine the amount of ink applied. Three coupons were cleaned for about 2 minutes using a Gardner Straight Line Washability unit. Three coupons were placed into a Gardner Straight Line Washability unit. A WypAll X60 reinforced wiper was saturated with the cleaning solutions and then attached to the cleaning sled. The cleaning unit was run for 75 cycles (~2 minutes). At the end of the cleaning cycle, coupons were wiped dry and weighed again so that efficiencies could be calculated.
Results:	Of the 10 products chosen, none were very effective in removing the ink using manual cleaning. The top four products removed under 10% of the ink. Some of the other products resulted in an increase in final weight over the contaminated weight. This effect could be due to the cleaning solution soaking into the ink, in an attempt to begin to break the ink down. However, no visual cleaning signs were evident after the 2 minutes of wiping. The table lists the amount of ink added, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
Aquavantage 3800 D	0.0061	0.0071	-16.39
	0.0099	0.0109	-10.10
	0.0477	0.0487	-2.10
Shopmaster	0.0405	0.0397	1.98
	0.0188	0.0191	-1.60
	0.0242	0.0244	-0.83
XL 100	0.0131	0.0129	1.53
	0.0065	0.0049	24.62
	0.0207	0.0204	1.45
SC 1000	0.0311	0.0285	8.36
	0.0137	0.0130	5.11
	0.0091	0.0080	12.09
Optisolv OP7171	0.0402	0.0405	-0.75
	0.0135	0.0133	1.48
	0.0172	0.0175	-1.74
Daraclean 236	0.0185	0.0239	-29.19
	0.0384	0.0400	-4.17
	0.0390	0.0421	-7.95
Eliminator	0.0360	0.0344	4.44
	0.0285	0.0279	2.11
	0.0266	0.0233	12.41
Polychem DeOx 007	0.0165	0.0141	14.55
	0.0154	0.0150	2.60
	0.0124	0.0123	0.81
	0.0122	0.0121	0.82

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LPS Precision Clean			
	0.0182	0.0172	5.49
	0.0173	0.0167	3.47
Micro 90	0.0208	0.0205	1.44
	0.0198	0.0199	-0.51
	0.0424	0.0414	2.36

Summary:

Substrates:	Aluminum
Contaminants:	Inks

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Brulin Corporation	Aquavantage 3800 GD	20	-9.53	☐	
Buckeye International	Shopmaster	20	-0.15	☐	
Buckeye International	XL 100 Cleaner & Degreaser	20	9.20	☐	
Gemtek Products	SC 1000 Aqueous Cleaner Concentrate	20	8.52	☐	
Kyzen Corporation	Optisolv OP7171	20	-0.34	☐	
Magnaflux	Daraclean 236	20	-13.77	☐	
Phase III Inc	Eliminator	20	6.32	☐	
US Polychem Corporation	Polychem DEOX 007	20	5.98	☐	
LPS Laboratories	Precision Clean Concentrate	20	3.26	☐	
International Products Corporation	Micro 90 Conc.	20	1.10	☐	

Conclusion: The next trial will attempt to screen potential non-aqueous products for ink removal.