CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2008
DateRun:	03/26/2008
Experimenters:	Jason Marshall, Shweta Bansal
ClientType:	Machining Company
ProjectNumber:	Project #1
Substrates:	Aluminum
PartType:	Coupon
Contaminants:	Inks
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric
Purpose:	To evaluate top products on second supplied ink using manual wiping.
Experimental Procedure:	The twelve successful products from the previous trial were used at full strength and room temperature. Twenty-four preweighed coupons were coated with the supplied Markal Valve Action Paint Marker (orange ink). Once dry, a second weight was recorded to determine the amount of ink added to the coupon. In contrast to the previous trial, two coupons were used per cleaning alternative. A handheld swab was immersed into the cleaning product and then manual wiped across the coupon for up to one minute. Following the cleaning, the coupons was wiped dry for 5 seconds. Observations were made, final coupon weights recorded, and the average efficiencies were calculated.
Results:	All but one product was successful in removing the orange ink from the aluminum coupons using manual cleaning. It was noted that some of soy-based products needed a second wiping to remove the excess cleaning product left behind. The successful products all required less than one minute to remove the ink. The table below lists the amount of ink applied, the amount remaining, the efficiency and the time needed to clean the ink.

Cleaner	Initial wt	Final wt	% Removed	Time Required (sec)
Soy Clear 1500	0.0084	0.0014	83.33	15
	0.0128	0.0030	76.56	
Ink Zapper	0.0153	0.0022	85.62	35
	0.0125	0.0034	72.80	
Methyl Ester 1618	0.0191	0.0026	86.39	20
	0.0108	0.0017	84.26	
Citrus Soy Solvent Cleaner & Degreaser	0.0094	0.0022	76.60	17-18
	0.0145	0.0040	72.41	
Graffiti Remover SAC	0.0197	0.0019	90.36	10
	0.0143	0.0016	88.81	
Soy Strong	0.0109	0.0015	86.24	<10
	0.0123	0.0026	78.86	
BioRenewables Industrial Degreaser	0.0094	0.0012	87.23	7-8
	0.0113	0.0017	84.96	
EP 921	0.0099	0.0007	92.93	8-9
	0.0116	0.0010	91.38	
Inproclean 4000 T	0.0169	0.0165	2.37	>60
	0.0125	0.0168	-34.40	
BG Solv 717 Ink & Graffiti Cleaner	0.0118	0.0006	94.92	6
	0.0091	0.0007	92.31	

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Graffiti remover	0.0073	0.0010	86.30	9
	0.0152	0.0008	94.74	
Smart Solve 605	0.0197	0.0008	95.94	9
	0.0180	0.0013	92.78	

Summary:

Substrates:	Aluminum
Contaminants:	Inks

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
AG Environmental Products	Soy Clear 1500	100	79.95	☑	
Vertec BioSolvents	Ink Zapper	100	79.21	☑	
Twin Rivers Technologies	Methyl Ester 1618	100	85.32	☑	
Bi-O-Kleen Industries	Citrus Soy Solvent Cleaner & Degreaser	100	74.50	☑	
Spartan Chemical Company	Graffiti Remover SAC	100	89.58	☑	
Spartan Chemical Company	Soy Strong	100	82.55	☑	
Spartan Chemical Company	BioRenewables - Restroom Cleaner	100	86.09	☑	
Inland Technologies Inc	EP 921	100	92.15	☑	
Oakite Products	Inproclean 4000 T	100	-16.02	☐	
BioGenesis Enterprises Inc	BG Solv 717 Ink & Graffiti Cleaner	100	93.61	☑	
Finger Lakes Chemical	Graffiti remover	100	90.52	☑	
United Laboratories International	Smart Solve 605	100	94.36	☑	

Conclusion:

The successful products will be used on the next supplied ink following the same procedure. Two of the products from Spartan were determined to be the same (or very similar) products. Only one of the two will be kept in the study.