

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008
 DateRun: 03/26/2008
 Experimenters: Jason Marshall
 ClientType: Machining Company
 ProjectNumber: Project #1
 Substrates: Aluminum
 PartType: Coupon
 Contaminants: Inks
 Cleaning Methods: Manual Wipe
 Analytical Methods: Gravimetric, Visual

Purpose: To evaluate semi-aqueous low VOC products for manual removal of ink from aluminum coupons.

Experimental Procedure: Following the selection process from the previous trial, twenty-one semi-aqueous alternatives with low VOC levels. These products were used at full strength and room temperature. Twenty-one preweighed coupons were coated with the supplied Dykem red ink. Once dry, a second weight was recorded to determine the amount of ink added to the coupon. In contrast to the previous trial, only one coupon was 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 single efficiency was calculated.

Results: Six of the twenty products removed over 90% of the Dykem red ink within 1 minute. An additional five products removed over 20% of the ink. The remaining nine were only moderately successful (despite the negative efficiency) as noted by visual analysis (ink wiping off during drying). The table below lists the initial amount of ink added, the amount remaining, the efficiency, VOC level and observation for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed	Observation
Soy Clear 1500	0.0071	0.0034	52.11	Good removal
Ink Zapper	0.0109	0.0009	91.74	Excellent - 20 seconds
Methyl Ester 1618	0.0487	0.0329	32.44	Okay
Soy Cleaner 180 D	0.0397	0.0437	-10.08	Fair-foamy
Soy Solve II	0.0191	0.0201	-5.24	Okay
Citrus Soy Solvent	0.0244	0.0155	36.48	Okay
SL 100	0.0129	0.0204	-58.14	Fair-little
Organic Cleaner/ Degreaser	0.0049	0.0052	-6.12	None-foamy
Kernal Clean	0.0204	0.0207	-1.47	None
Graffiti Remover SAC	0.0285	-0.0003	101.05	Excellent - 20 seconds
DT 600 Wash	0.0130	0.0157	-20.77	Fair-foamy
EP 921	0.0080	-0.0001	101.25	Excellent - 10 seconds
Inproclean 4000 T	0.0405	0.0294	27.41	Good removal
BG Solv 717	0.0133	0.0001	99.25	Excellent - 10 seconds
3D Degreaser	0.0175	0.0201	-14.86	Fair-foamy

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PES 320	0.0239	0.0277	-15.90	Okay
Graffiti Remover	0.0400	-0.0003	100.75	Excellent - 20 seconds
Soy Strong	0.0421	0.0334	20.67	Okay
Smart Solve 605	0.0344	0.0026	92.44	Good/excellent
Extreme Simple Green	0.0279	0.0326	-16.85	Little/none

Summary:

Substrates:	Aluminum				
Contaminants:	Inks				
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
AG Environmental Products	Soy Clear 1500	100	52.11	<input checked="" type="checkbox"/>	
Vertec BioSolvents	Ink Zapper	100	91.74	<input checked="" type="checkbox"/>	
Twin Rivers Technologies	Methyl Ester 1618	100	32.44	<input checked="" type="checkbox"/>	
Sysco Corporation	Soy Cleaner 180 D	100	-10.08	<input type="checkbox"/>	
Soysolv Industrial Products	Soysolv II solvent	100	-5.24	<input type="checkbox"/>	
Bi-O-Kleen Industries	Citrus Soy Solvent Cleaner & Degreaser	100	36.48	<input checked="" type="checkbox"/>	
Bi-O-Kleen Industries	Soy Lube- SL 100	100	-58.14	<input type="checkbox"/>	
1st Envirosafety Inc. - No Longer Exists	Organic Cleaner/Degreaser - For Comparison Purposes Only	100	-6.12	<input type="checkbox"/>	
Franmar Chemical	Kernel Clean glass cleaner	100	-1.47	<input type="checkbox"/>	
Spartan Chemical Company	Graffiti Remover SAC	100	101.05	<input checked="" type="checkbox"/>	
Nensco	DT 600 Press Wash	100	-20.77	<input type="checkbox"/>	
Inland Technologies Inc	EP 921	100	101.25	<input checked="" type="checkbox"/>	
Oakite Products	Inproclean 4000 T	100	27.41	<input checked="" type="checkbox"/>	
BioGenesis Enterprises Inc	BG Solv 717 Ink & Graffiti Cleaner	100	99.25	<input checked="" type="checkbox"/>	
Finger Lakes Chemical	3 D Degreaser	100	-14.86	<input type="checkbox"/>	
Prisco Printers Service	PES 320	100	-15.90	<input type="checkbox"/>	
Finger Lakes Chemical	Graffiti remover	100	100.75	<input checked="" type="checkbox"/>	
Spartan Chemical Company	Soy Strong	100	20.67	<input checked="" type="checkbox"/>	
United Laboratories International	Smart Solve 605	100	92.44	<input checked="" type="checkbox"/>	
Simple Green	Extreme Simple Green Aircraft & Precision Cleaner	100	-16.85	<input type="checkbox"/>	
Spartan Chemical Company	BioRenewables - Restroom Cleaner	100	14.72	<input checked="" type="checkbox"/>	

Conclusion:

The top 11 products will be evaluated on the next supplied ink.