CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2010
DateRun:	06/24/2010
Experimenters:	Jason Marshall, Timothy Weil
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Stainless Steel, Wood
PartType:	Coupon
Contaminants:	Inks, Paints
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric
Purpose:	To evaluate ink and paint removal for supplied products as compared to traditional solvent
Experimental Procedure:	One set of preweighed stainless steel and wood coupons were coated with Dayetek Daye Black quick dry lithographic ink using a handheld swab. A second set of preweighed stainless steel and wood coupons were coated with Barnes Group Bowman Distribution Industrial Finish Gloss Black spray paint No 24700. Coated coupons were allowed to sit for several hours for drying of applied ink/paint. Once dry, coupons were weighed to determine the amount of contamination that was applied. Three coupons were placed into a Gardner Straight Line Washability unit. A Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 5-7 sprays of cleaning solutions. Each coupon was sprayed 7-10 times with the same cleaning solution. The cleaning unit was run for 20 cycles (~33 seconds). At the end of cleaning, final weights were recorded, and efficiencies were calculated.
Results:	The SG22002D was the more effective solvent on the paint from stainless steel and the 50/50 mix with SG21000D and SG22002D was almost as effective as the DBE on the ink from stainless steel. Gravimetric analysis was inconclusive for both soils from the wood coupons due to weight gain in the final "clean" weights. The previous trial showed that SG21000D was the more effective cleaner on the ink and the SG22002D for the paint. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon.

Cleaner	Initial wt	Final wt	% Removed
SG21000D- Stainless Steel-Ink			
	0.1885	0.1074	43.02
	0.1692	0.0965	42.97
	0.1178	0.0661	43.89
SG22002D- Stainless Steel-Ink			
	0.1089	0.0076	93.02
	0.1502	0.0318	78.83
	0.2402	0.1446	39.80
50/50- Stainless Steel-Ink			
	0.1770	0.0207	88.31
	0.2322	0.0256	88.98
	0.1662	0.0267	83.94
DBE- Stainless Steel-Ink			
	0.1984	0.0145	92.69
	0.1090	0.0129	88.17
	0.1413	0.0095	93.28
SG21000D- Wood-Ink			
	0.6274	0.4925	21.50
	0.5305	0.5018	5.41
	0.6458	0.4834	25.15
SG22002D- Wood-Ink			
	0.6170	0.4496	27.13

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	0.4505	0.3769	16.34
	0.5546	0.4101	26.05
50/50- Wood-Ink			
	0.6075	0.5539	8.82
	0.4839	0.5435	-12.32
	0.5774	0.7550	-30.76
DBE- Wood-Ink			
	0.5349	0.6163	-15.22
	0.6076	0.7552	-24.29
	0.4241	0.6350	-49.73
SG21000D- Stainless Steel- Spray Paint			
	0.0746	0.0546	26.81
	0.0384	0.0247	35.68
	0.0569	0.0482	15.29
SG22002D- Stainless Steel- Spray Paint			
	0.0590	0.0087	85.25
	0.0636	0.0048	92.45
	0.0719	0.0040	94.44
50/50- Stainless Steel-Spray Paint			
	0.0656	0.0326	50.30
	0.0547	0.0353	35.47
	0.0680	0.0242	64.41
DBE- Stainless Steel-Spray Paint			
	0.0634	0.0067	89.43
	0.0478	0.0030	93.72
	0.0639	0.0169	73.55
SG21000D- Wood- Spray Paint			
	0.1613	0.4811	-198.26
	0.1332	0.4649	-249.02
	0.1629	-0.8476	620.32
SG22002D- Wood- Spray Paint			
	0.1485	0.3612	-143.23
	0.1765	0.4455	-152.41
	0.1839	0.4094	-122.62
50/50- Wood-Spray Paint			
	0.2273	0.5666	-149.27
	0.1825	0.7567	-314.63
	0.1862	0.8809	-373.09
DBE- Wood-Spray Paint			
	0.1856	0.3161	-70.31
	0.1958	0.3294	-68.23
	0.2093	0.3592	-71.62

Summary

	Stainless Steel		Wood	
Product	Paint	Ink	Paint	Ink
SG21000D	25.93	43.29	17.35	57.68
SG22002D	90.71	70.55	23.17	-139.42
50/50	50.06	87.07	-11.42	-279
DBE	85.57	91.38	-29.75	-70.06

Summary:

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Substrates:	Stainless Steel, Wood				
Contaminants:	Inks, Paints				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Segetis	Segetis SG21000D	100	25.93	☐	
Segetis	Segetis SG22002D	100	90.71	☑	
Segetis	Segetis SG21000D	50	50.06	☐	50:50 mix with SG22002D
DuPont	DBE 6	100	85.57	☑	

Conclusion: The supplied solvents were again shown to have success at removing ink and paint using a short dwell time through manual cleaning.