CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2003
DateRun:	06/03/2003
Experimenters:	Jason Marshall
ClientType:	Printing Company
ProjectNumber:	Project #1
Substrates:	Stainless Steel
PartType:	Coupon
Contaminants:	Inks
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric
Purpose:	To evaluate cleaners on second supplied ink.
Experimental Procedure:	Six products were selected from the previous trial and the SSL's databases based on client supplied information. Even though the substrate to be cleaned was designated as a textile (cloth t-shirts) the initial testing was conducted on a metal substrate so that a quantitative assessment could be made on the selected cleaners. Four of the cleaners were used at full strength, one was used at 20% as recommended by the vendor and the last one was diluted to 10%. The dilutions were made using DI water. All six products were poured into 600 ml glass beakers. All solutions were used at room temperature. Eighteen preweighed stainless steel coupons were coated with one of the supplied inks, PolysOne Kennesaw Wiflex MX Mixing Colors -blue (85-68-7, 9002-86-2) using a hand held swab and allowed to dry. After drying, coupons were weighed again to determine the amount of ink applied to each coupon. Three coupons were immersed into each solution and cleaned for five minutes using stir-bar agitation. Coupons were rinsed in tap water at 120 F for 15 seconds and dried using a Master Appliance Heat Gun at 500 F for 1 minute. When coupons cooled to room temperature, final weights were measured and product efficiencies were calculated.
Results:	Bio T Max and D-Limonene removed over 80% of the blue ink using immersion cleaning only. The other four products had vast improvement when wiped three times with a paper towel. Of the four, only one did not remove over 90% of the ink. The table below lists the amount of ink added and removed after each cleaning process.

Cleaner	Initial wt	Final wt	% Removed
Bio T Max	0.3850	0.0083	97.84
	0.2028	0.0060	97.04
	0.1178	0.0060	94.91
Graffiti Remover	0.1721	0.4891	-184.20
	0.3962	0.6827	-72.31
	0.2112	0.4958	-134.75
D-Limonene	0.1153	0.0450	60.97
	0.1496	0.0124	91.71
	0.3151	0.0199	93.68
Soy Clear 1500	0.2428	0.0684	71.83
	0.1409	0.0978	30.59
	0.1238	0.1279	-3.31
USA Wash	0.2694	0.2895	-7.46
	0.2340	0.2489	-6.37
	0.2610	0.2776	-6.36
Valtron SP 2201	0.3170	0.3064	3.34
	0.2412	0.2289	5.10
	0.1793	0.1708	4.74
Wipe-Graffiti Remover	0.1721	0.0853	50.44
	0.3962	0.2184	44.88
	0.2112	0.0792	62.50
Wipe-Soy Clear 1500	0.2428	0.0039	98.39
	0.1409	0.0048	96.59

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	0.1238	0.0040	96.77
Wipe-USA Wash	0.2694	0.0029	98.92
	0.2340	0.0022	99.06
	0.2610	0.0043	98.35
Wipe-Valtron SP 2201	0.3170	0.0662	79.12
	0.2412	0.0026	98.92
	0.1793	0.0030	98.33

Summary:

Substrates:	Stainless Steel
Contaminants:	Inks

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Bio Chem Systems	Bio T Max	100	96.60	☑	
Twin Rivers Technologies	Graffiti Remover	100	-130.00	☐	
Florida Chemical Company	D-Limonene	100	82.12	☑	
AG Environmental Products	Soy Clear 1500	100	33.04	☐	
Nensco	USA Wash	20	-6.70	☐	
Valtech Corporation	Valtron SP 2201	10	4.39	☐	
Twin Rivers Technologies	Graffiti Remover	100	52.60	☐	Wipe
AG Environmental Products	Soy Clear 1500	100	97.25	☑	Wipe
Nensco	USA Wash	20	98.78	☑	Wipe
Valtech Corporation	Valtron SP 2201	10	92.12	☑	Wipe

Conclusion: The successful cleaners will be evaluated on the next supplied ink.