CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2002
DateRun:	06/02/2002
Experimenters:	Jason Marshall
ClientType:	Optical Manufacturer
ProjectNumber:	Project #1
Substrates:	Glass/Quartz
PartType:	Coupon
Contaminants:	Inks
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric
Purpose:	To evaluate successful cleaners under different operating conditions.
Experimental Procedure:	The four successful products from the previous trial were used at full strength and heated to 130 F on a hot plate in 400 ml beakers. Twelve preweighed coupons were coated with with a layer of Essilor Yellow Ink Y368 Akyl resin printing ink (107-87-9, 123-86-4, 108-65-6, 1330-20-7) using a hand held swab. Once the ink was dry, a second weighing was recorded. Three coupons were cleaned in each solution for 5 minutes using only stir-bar agitation. After cleaning, the coupons were rinsed in a tap water spray for 15 seconds at 120 F and dried for 15 seconds using a Master Appliance Heat Gun at 500 F. Final weights were recorded and efficiencies calculated.
Results:	The tap water rinse and the increased concentrations improved the cleaning efficiencies for two cleaners, Bio T Max and 7360. The other two solutions, Opticlear and Methyl Ester 1618, had efficiencies that remained the same as in the first trial.

Cleaner	Initial wt of cont.	Final wt of cont.	%Cont Removed
Bio T Max	0.0450	0.0004	99.11
	0.0072	-0.0002	102.78
	0.0323	0.0001	99.69
OptiClear	0.0369	0.0004	98.92
	0.0318	0.001	96.86
	0.0513	0.0004	99.22
7360	0.0297	0.0006	97.98
	0.0822	0.0014	98.30
	0.0770	-0.0001	100.13
1618	0.0500	0.0014	97.20
	0.0429	0.0010	97.67
	0.0484	0.0034	92.98

Observations:	
Bio T Max:	Solution turned cloudy yellow within 15 seconds. Most of the ink was gone in less than 2 minutes.
Opticlear:	Solution turned yellow within 15 seconds. Most of the ink was gone in less than 2 minutes. Yellow haze appeared after drying.
7360	Solution turned yellow within 30 seconds. Most of the ink was gone around 3 minutes. Less yellow haze than Opticlear.
1618	Solution turned yellow within 30 seconds. Some ink spots remained after cleaning.

Summary:

Substrates:	Glass/Quartz				
Contaminants:	Inks				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**

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Bio Chem Systems	Bio T Max	100	100.53	☑	
National Diagnostic	Opti Clear	100	98.33	☑	
Loctite Corporation	7360	100	98.80	☑	
Twin Rivers Technologies	Methyl Ester 1618	100	95.95	☑	

Conclusion: The four solutions will be used in the next trial to clean the supplied optical lenses.