CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1999
DateRun:	09/28/1999
Experimenters:	Jason Marshall, Nicole Vayo
ClientType:	Consultant
ProjectNumber:	Project #1
Substrates:	Ceramics, Alumina
PartType:	Coupon
Contaminants:	Alcohol
Cleaning Methods:	
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate client's current cleaning system through gravimetric analysis.

Experimental Procedure:

Newly supplied ceramic coupons were weighed and then precleaned using Micro 90 at 2% solution by volume using a Crest 40 kHz ultrasonic tank model 4Ht 1014-6 for 10 minutes at 100 F. Coupons were weighed and compared to benchmarked measured weights. Following the precleaning, the coupons were coated with the Evanol solution and placed into an oven at 212 F for 25 minutes to dry the coating. After the coupons were cooled, they were weighed again.

At this point, the samples were wrapped individually with lint free paper and delivered to the client for cleaning. After cleaning, coupons were returned wrapped in plastic bags. Final clean weights were made and the efficiency of the client's system was calculated.
Coupons were then visually inspected for signs of contamination.

SUBSTRATE MATERIAL: Ceramic-Alumina coupons
CONTAMINANTS: DuPont Evanol Concentrated (Vinyl Alcohol Polymers & Copolymers CAS#s: 9002-89-5, 25213-24-5, 54626-91-4; Methanol Bulk/Packaged CAS #: 67-56-1; Sodium Acetate CAS#: 127-09-3)
CONTAMINATING PROCESS USED: Coated coupons with contaminant solution and dry in an oven for approximately 25 minutes at 212 F.

Results:

Through gravimetric analysis, the system was found to have a contaminant removal of 99.6% with a standard deviation of about 0.5. Table 1. lists the results for each coupon as well as the average and deviation.

Table 1. Calculated Efficiencies and Observations.

%	Visual Observations
99.73	top
99.77	none
99.6	none
99.47	bottom
99.72	left
99.14	top
99.6	none
99.28	top
100.11	none
100	none
98.49	none
98.67	top
99.56	left/top
98.88	bottom
99.54	none
100	none
100	none
99.96	none
99.92	left/bottom
99.35	none
99.45	none
99.22	none
99.49	none
99.68	none

CLEANING LABORATORY EVALUATION SUMMARY

99.75	none
99.95	left
99.58	blue on #
99.69	none
101.41	none
100.07	none
99.64	Average

Summary:

Conclusion: The client's system was evaluated and determined to remove nearly all of the contaminant (99.64%) from the supplied coupons. Some of the coupons were noted to have some residual contamination remaining after coupons. All coupons will be stored for future analysis using technique to be developed.