CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2005

DateRun: 07/26/2005

Experimenters: Jason Marshall

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Glass/Quartz

PartType: Coupon

Contaminants: Calcium/lime

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric, Photography

Purpose: To evaluate supplied products for calcium carbonate removal under different tap water bath rinsing.

Experimental Procedure: A lime/water slurry was made by mixing 20 grams of calcium carbonate in 100 milliliters of DI water. The solution was mixed to suspend the calcium carbonate in the water. A plastic swab was used to apply the slurry mix onto nine preweighed mirrored glass coupons. The coated coupons were allowed to dry at room temperature. After the slurry mix was dried, the coupons were weighed again to determine the amount of calcium carbonate that was applied to the coupons. Three coupons were immersed into a 400 ml beaker filled with the supplied cleaning products. The coupons were allowed to sit in the solution for 5 minutes with stir bar agitation at room temperature. In addition to the two supplied cleaners, a beaker with only water was used. At the end of the soaking, the coupons were rinsed (2-3 seconds) in a heated tap water rinse (120 F) and then were dried using compressed air for 15 seconds at room temperature. Once dry, visual observations were made and the coupons were weighed a final time. Removal efficiencies for each product was calculated.

Results: Both products left a small amount of residue on the coupons after cleaning, rinsing and drying. The water cleaned coupons had the highest efficiency but had the most visible calcium carbonate. The table lists the amount of contaminant added, the amount remaining and the efficiency for each coupon. Photos of the cleaned coupons are also included.

Cleaner	Initial wt	Final wt	% Removed
DFC 23	0.1198	0.0187	84.39
	0.0916	0.0055	94.00
	0.0479	0.0042	91.23
DFC 30	0.1455	0.0191	86.87
	0.0919	0.0162	82.37
	0.0798	0.0143	82.08
Water	0.1042	0.0008	99.23
	1.2090	0.0018	99.85
	0.0998	0.0018	98.20

Summary:

Substrates:	Glass/Quartz				
Contaminants:	Calcium/lime				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Cogent Environmental Solutions	DFC 23	100	89.87	☑	
Cogent Environmental Solutions	DFC 30	100	83.78	☐	
Water	Water	100	99.09	☑	

Conclusion: The two products DFC 23 and DFC 30 will be tested again using a low flow tap water rinse in an attempt to remove the residue after cleaning.