CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2000

DateRun: 01/17/2001

Experimenters: Jason Marshall, John Brunelle

ClientType: Chemical Company

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Latex binder

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To identify additional cleaning products for static mixer cleaning.

Experimental Procedure: Three cleaners were selected from the lab's database of testing based on past testing performances. Two aqueous products were diluted to 5% in 600 ml beakers using DI water. The semi-aqueous product was diluted to 50%. The three solutions were placed into the ultrasonic tank that was heated to 130 F. The solutions were allowed to equilibrate with the bath water and were de-gassed for 20 minutes.

Nine preweighed coupons were contaminated with the binder solution previously supplied to the lab. In order to simulate conditions, the contaminant was dried rapidly using a Master Appliance Corp, Hot-air gun model HG-301A at 500 F for two to three minutes. Once the coupons cooled to room temperature, the coupons were weighed to determine the amount of contaminant applied. Three coupons were cleaned in each solution for five minutes using an ultrasonic tank (Crest 40 kHz ultrasonic tank model 4Ht 1014-6). The coupons were rinsed for 30 seconds in tap water at 120 F and air dried for one hour at room temperature. Coupons were then weighed a final time and the efficiencies were calculated.

SUBSTRATE MATERIAL: stainless steel coupons
CONTAMINANTS: Latex binder (water 53.648%, Vultex CA-1 catalyst 0.724% (7664-41-7), Igepal CO-630 0.545% (9016-45-9), Biosoft D35 X 2.595%, Dur-O-Set NS 25-1823 24.447% (50-00-0), Fulatex Polymer 12.663%, Black pigment BS 15870 5.478%(1333-86-4), Repearl F-8025 0.900% (57-55-6)
CONTAMINATING PROCESS USED: Coated using eye dropper

Results: Both the Oakite and Brulin products removed over 97% of the latex binder mix within the five minutes of cleaning. The Envirosolutions Bio T Max was inconsistent, only averaging 50% removal with a standard deviation of 31.48. Table 2 lists the calculated efficiencies for the three coupons cleaned.

Table 2. Cleaning Efficiencies

Product	Oakite	Brulin	Envirosolutions
Coupon 1	96.47	99.79	75.52
Coupon 2	95.87	99.65	58.4
Coupon 3	99.38	98.51	14.48
Average	97.24	99.32	49.47

Summary:

Substrates:	Stainless Steel				
Contaminants:	Latex binder				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Brulin Corporation	Formula 815 GD	5	99.32	☑	
Bio Chem Systems	Bio T Max	50	49.47	☐	
Oakite Products	Inproclean 3800	5	97.24	☑	

Conclusion: Since both Oakite Inproclean 3800 and Brulin 815 GD were highly successful in removing the binder, the next trial will use both solutions to clean the supplied static mixers.