CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1997

DateRun: 09/09/1997

Experimenters: Jason Marshall, Prashant Trivedi

ClientType: Manufacturer of Security Systems

ProjectNumber: Project #1

Substrates: Steel

PartType: Coupon

Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: Determine if concentration is best possible choice

Experimental Procedure: The purpose of the experiment was to determine if the client's current cleaner concentration was their best possible choice. The existing cleaner concentration, 3%, was compared to two other concentrations, 1% and 5%. Percent removal was selected as the basis in determining which cleaner was the superior. Coupons were contaminated using the client supplied oil with a swab. The contaminated coupons were allowed to sit for two hours before taking the contaminated weights. The coupons were then cleaned with the client supplied cleaner at the three concentrations. The cleaners were heated in beakers to 125F. Cleaning was performed for two minutes in beakers. The coupons were then rinsed in a beaker with a tap water for fifteen seconds at 120 F. The parts were then allowed to air dry. Percent removal was determined for each cleaner.
SUBSTRATE MATERIAL: 1020 cold rolled steel
CONTAMINANTS: Quaker C1A US oil

Results: All three concentrations of the Oakite cleaner had good to excellent removal of the oil. The efficiency of the cleaner increased as the concentration increased as seen in Figure-1. The 5% solution had over 99% removal on each coupon, the 3% had around 98.5% removal and the 1% had just 98% for the average removal. Each of the concentrations also were very consistent in the removal of the contaminant as is shown in Table-1.

Table-1 Percent Removal	1%	3%	5%
	98.97	99.01	99.31
	97.33	98.66	99.36
	97.85	97.71	99.56
Average	98.05	98.46	99.41
Std dev	0.84	0.68	0.13

Summary:

Substrates:	Steel				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Oakite Products	Inproclean 1300	1	98.05	☑	
Oakite Products	Inproclean 1300	3	98.46	☑	
Oakite Products	Inproclean 1300	5	99.41	☑	

Conclusion: From the data obtained, the concentration that the client was using appeared to be very acceptable for the consistent removal of a majority of the contaminant oil. Depending on how clean the substrate needs to be for the next stage in the clients process would determine whether or not the concentration could be decreased down to the 1% concentration. It should be noted that if the concentration is decreased, this factor would alter the overall bath life. Therefore, it is recommended to remain at the current cleaning concentration of 3%.

The next phase in the laboratory's cleaning trials will be to determine a correlation between bath characteristics (i.e. color, turbidity, percent solids) and bath efficiency/life.